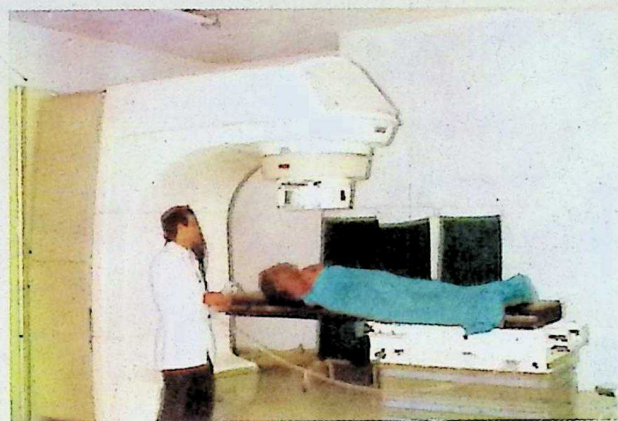


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PROFILE OF SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATIONS

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(Agricultural Sciences and
Natural and Applied Sciences)



DEPARTMENT OF SCIENTIFIC & INDUSTRIAL RESEARCH
MINISTRY OF SCIENCE AND TECHNOLOGY



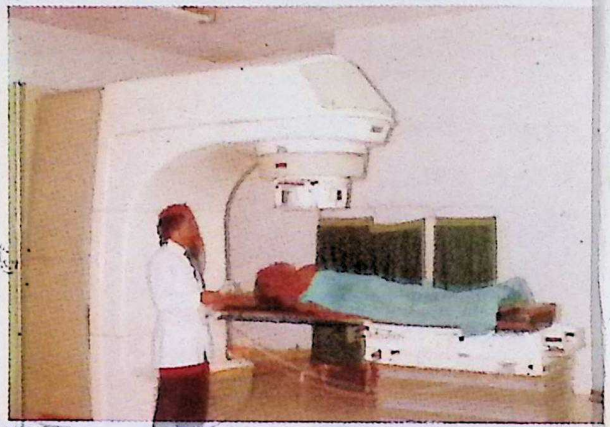
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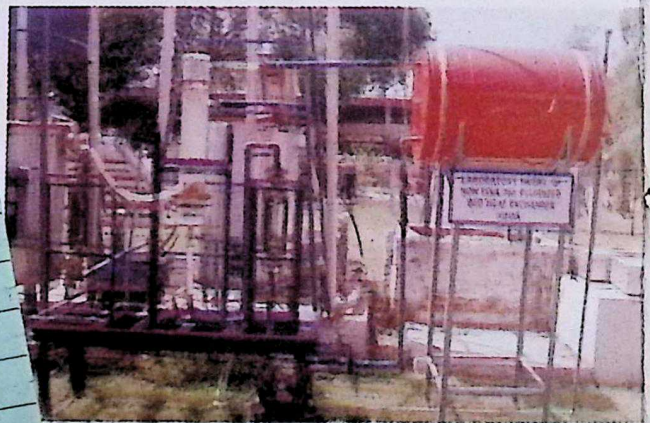
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गुरुकुल कांगड़ी विश्वविद्यालय
कृपया पुस्तक के ऊपर कोई निशान आदि
न लगायें।



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PROFILE OF SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATIONS 1997

(Agricultural Sciences and
Natural and Applied Sciences)

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R506, IND-P, 1997



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December 1997

Stock Verification-2024



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DEPARTMENT OF SCIENTIFIC & INDUSTRIAL RESEARCH
MINISTRY OF SCIENCE AND TECHNOLOGY

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PREFACE

The Department of Scientific and Industrial Research (DSIR) has a scheme for granting recognition to non-commercial Scientific and Industrial Research Organisations (SIROs). The Organisations eligible for recognition are Associations i.e. Societies registered under the Society Registration Act, 1860 or any such Act passed by the State Government, having the main objective of undertaking scientific and/or industrial research; R&D companies, incorporated under section 25 of the Companies Act, 1956 set up for engaging in R&D activities; institutions having adequate infrastructural facilities to undertake scientific and/or industrial research and having undertaking of scientific and/or industrial research as the main object of the institution, and professional bodies having undertaking/promoting scientific and/or industrial research as the main object; Universities established or incorporated by/or under a Central or State Act, institutions declared under section 3 of the University Grants Commission Act, 1956; and Colleges which are affiliated to Universities and are undertaking scientific research in specific disciplines.

The SIROs recognised by DSIR are eligible for approval and notification under section 35(1)(ii)/(iii) of the Income-Tax Act, 1961 and also for Custom Duty exemption and Central Excise duty waiver as per provisions of Govt. notifications No. 51/96-CUSTOMS dated 23rd July 1996 and No. 10/97-Central Excise, dated 1st March 1997 respectively.

Secretary, Department of Scientific and Industrial Research is the Authority for granting recognition to SIROs and Director General (Income-Tax Exemptions), Calcutta in concurrence with Secretary, DSIR is the Prescribed Authority for approval and notification of SIROs under section 35(1)(ii)/(iii) of the I.T. Act, 1961.

At present there are 545 SIROs duly recognised by DSIR. Of these, 194 are in natural and applied sciences; 168 in medical sciences; 40 in agricultural sciences and 121 in social sciences and 22 Universities/Colleges. The SIROs have taken up several research programs and contributed to development of new techniques, methods, products and processes.

The DSIR has initially brought out a Profile of Scientific Research Institutions covering 70 SIROs. A second issue covering over 180 SIROs was published in June 1989, third issue covering 180 SIROs was brought out in March 1991 and a fourth issue covering 321 SIROs was published in March 1993. The present publication "Profile of scientific and Industrial Research Organisations" in two volumes cover the activities and achievements of over 338 SIROs. Volume one covers the areas of agricultural sciences (24) and natural and applied sciences (142). Volume two covers medical sciences (105); and Social Sciences (67). It is hoped that this publication will give further information on the infrastructural facilities, R&D capabilities and achievement made by SIROs recognised by the DSIR.

Efforts and hardwork put in by Dr. K. Kamal, Director, Shri H.L. Jussal, Principal Scientific Officer and Shri A.V. Chainulu, Senior Scientific Officer, in compiling this publication are acknowledged.

January 1998
New Delhi

Jagdish Singh
Joint Adviser
Department of Scientific & Industrial Research

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AGRICULTURAL SCIENCES

AMUL RESEARCH AND DEVELOPMENT ASSOCIATION

Address

Amul Diary
Anand 388 001,

Background

Status of the SIRO : Association
Year of establishment : 1964
Major objective : To carry out research, development and extension work conducive to the economic development of agriculturists and to implement such programmes which will improve and productive efficiency of live stock.
Major research areas : Milk product developments Dairy herd improvement
Initial recognition by the DSIR : 1990

Income and R & D expenditure

		(Rs. in lakhs)	
Income	1992-93	1993-94	1994-95
Donations received	240	205	170
Grants received	3.94	0.57	4.13
Other income	67.46	67.45	87.55

Expenditure on R & D

● Capital	27.8	2.81	3.89
● Recurring	304.84	268.83	244.16

Infrastructural facilities

Land & Building : Area 13 Acres; Value Rs. 2.09 Lakhs
Equipment facilities : Gross Value : Rs. 83.69 Lakhs.
List of sophisticated equipment : Electronic Milko Tester
Milkoscan (NIR Milk analyser)
Near Infrared feed quality analyser
Programmable biological freezer
Micro wave moisture analyser
Stereo microscope
Phase contrast microscope
Fat/oil analyser
Salt analyser

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical	Doctorates, Post Graduates, & Graduates	40	3
Social Sciences and Others		12	—
Library facilities	: Make use of Amul's library and Gujarat Agriculture University library.		

Major achievements claimed

- (i) Formulations and process have been perfected to manufacture low fat/low calorie fat spread made exclusively from milk fat and a low fat spread made from a mixture of milk fat and vegetable fat have been commercially introduced in the market.
- (ii) Technology for manufacturing varieties of fresh cheese is under development.
- (iii) Bulk milk chilling system which can operate 8 to 10 hours a day and chill milk at village level which can operate on electricity or diesel generator set was got designed and installed in 25 villages to maintain the quality of milk and to reduce the haulage cost. More number of villages will be covered under this system in the near future.
- (iv) Embryo transfer in cattle and buffalo is at field level. Under this programme 322 embryos were transferred resulting the 47 pregnancies. Out of this 32 animals have already calved.
- (v) Jire evaluation through progeny testing is in progress.

Seminars/Conferences attended : 11
organised

Name and Designation of Senior Researchers

- Dr. D.G. Shah, Scientist
- Dr. M.C.S. Nair, Scientist
- Dr. Gopkumar, Scientist
- Shri R.V.K. Jogi, Scientist
- Dr. R. V. Prasad, Scientist
- Dr. K. Ratnam, Scientist
- Dr. H. K. Nair, Scientist

ASPEE AGRICULTURAL RESEARCH AND DEVELOPMENT FOUNDATION

Address:

P.B. No. 7602, Aspee House,
Adarsh Housing Soc.,
Cross Rd. No. 1, Malad (W)
Bombay-500 064.

Background
Status of the SIRO

: R&D Compay

Year of established

: 1973.

Major objectives

: Undertake Scientific research to evolve new method/technology & better farm practices for increasing agricultural production; organise field projects for translating development technology to the farmers; provide fellowships, prizes, incentives to Agricultural Students/Farmers for their excellence.

Major research area

: Agriculture

Income and R & D expenditure

	<i>(Rs. in lakhs)</i>		
<i>Income</i>	1992-93	1993-94	1994-95
Donations received	NIL	NIL	NIL
Grants received	NIL	NIL	NIL
Other income	17.38	16.15	18.94
(Interest on fixed Deposit)			

Expenditure on R & D

● Capital	0.034	0.11	1.19
● Recurring (Admn. etc.)	11.79	11.86	*43.51

(*includes Rs. 29 lakhs donated to ASPEE Horticultural & Forestry College, Navsari and 2 lakhs to Ramkrishna Mission, Ranchi)

Infrastructural facilities

Land	: Area : 17.2 ha; Value : Rs. 2.57 lakhs
Building	: Area : 1389 m.sq; Value : Rs. 21.59 lakhs
Equipments facilities	: Gross Value : Rs. 6.13 lakhs
Library facilities	: Well equipped library with 1,000 books and 36 periodicals.

Major achievements claimed

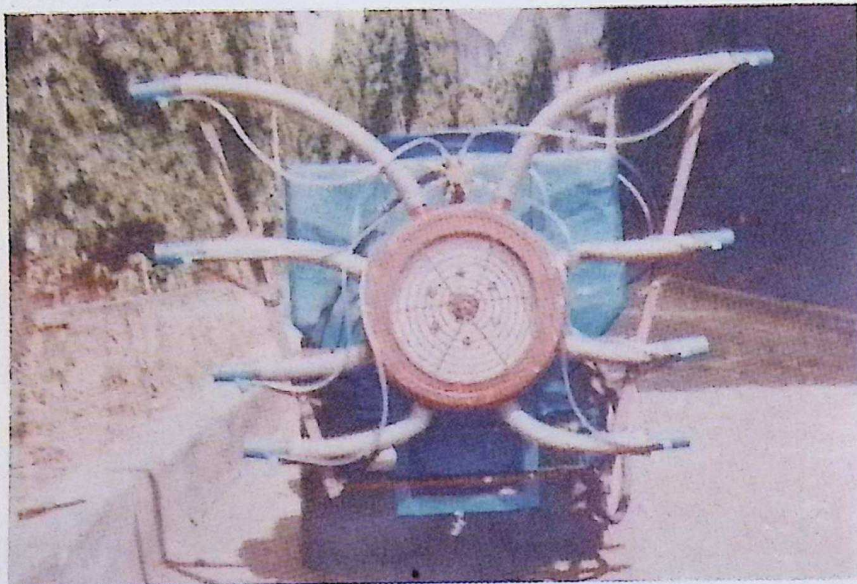
- Technology developed and transferred for upscaling/ commercialisation : Growing forest Nursery of Teak, Shivan, Suru etc. to distribute among the farmers at reasonable cost.
- Research Papers/Reports published : 165 Nos. M.Sc and 43 Nos. Ph.D. Thesis were written by Apsee Junior and Senior fellows
- Seminars/Conferences attended/organised : Farmers day held on 2nd March, 1995. Total 250 farmers attended from villages of Wada and Bhiwali Tehsil.
- Any other : i) Management of azolia herbicide and nitrogen for weed control in transplanted rice.
ii) Investigation on in vitro culture studies in grain Sorghum.

- iii) Estimation of genetic variance and predicted response to suction under three methods of recurrent suction in pearl millet.
- iv) Studies on growth and yield performance of different genotypes of vegetable cow pea.

Aspee Foundation arranged for various inputs like seeds, fertilizers, pesticides & facilities for bank loan for the crop season for farmers who took part in our practical field demonstrations.

Name and Designation of five Senior Researchers.

- Dr. M.V. Thombare, Co-ordinator
- Mr. R.M. Muzmudar, Co-ordinator
- Mr. K.M. Haravade, Research Officer
- Mr. S.S. Jadhav, Research Officer
- Ms. A.L. Naik, Research Assistant



AIR Assisted Sprayer for Row Crops

ASPEE RESEARCH INSTITUTE

Address:

Adarsh Housing Society,
Cross Road No. 2,
Plot No. 1,
Malad (West), Bombay 400 064.

Background

The Institute is u/s 25 of the companies Act 1956 vide certificate of registration granted by Registrar of companies on 30.05.1983 pursuant to licence u/s 25 of the companies act 1956 issued by the Regional Director on 13.05.1983.

Initially recognised by DSIR : 1998 by in 1984 Ministry of Finance.

Objective:

The Institute conduct research and development work in Agrochemical application equipment and techniques with respect to economy, efficiency, effectiveness, safety of operator and pollution control. The Institute conducts research on manually as well as power operated plant protection equipments for field crops and orchard crops. It also deals with design and development of Agricultural machinery such as rice transplanters, seed drills, fertilizer applicators, drip irrigation etc.

Income and R & D expenditure:

		(Rs. in lakhs)		
Income	1992-93	1993-94	1994-95	
Donations received	NIL	10.40	4.80	
Grants received	NIL	NIL	NIL	
Other income	3.06	3.07	4.75	
Expenditure on R & D	3.37	3.28	3.42	
● Capital:	21.07			
● Recurring:	3.42			

Infrastructural facilities:

Land & Building : Area 0.768 hectare; Value : Rs. 7.45 lakhs

Equipment facilities : Gross Value : Rs. 2.64 lakhs.

R & D Manpower:

	<i>Qualification</i>	<i>Full time</i>	<i>Part time</i>
Scientific & Technical			
	Post Graduates (M.S./M.Tech.)	4	2 (Honorary)
Others		3	—

Library facilities : Approximately 4000 number of books, periodicals, reprints etc. related to Agricultural Engineering

Major achievements claimed:

- Technologies developed and transferred for upscaling/commercialisation : (i) Air assisted spraying system for grape vine-yards.
- Technologies developed and ready for upscaling : (i) Air assisted spraying system for rubber plantation.
- New Techniques/methodologies developed and implemented : (i) Ergonomically modified lever operated knapsack sprayer.
(ii) Hollowcone nozzle creating fine droplets.
(iii) Centrifugal blower for applying pesticides on cotton crop.

- Research papers/reports published 8

Name of Senior Researchers:

- Prof. A. C. Pandya
- Shri S. L. Patel
- Prof. R. P. Sandge
- Mr. S. K. Jain
- Mr. K. G. Dhande
- Mr. P. G. Shinde

BAIF DEVELOPMENT RESEARCH FOUNDATION

Address:

Urulikanchan,
Tal Haveli,
Pune 412 202.

Background:

- Status of the SIRO : Public trust
- Year of establishment : 1967
- Major objective : Create opportunities of gainful self employment for rural families, especially disadvantaged sections, ensuring sustainable livelihood, enriched environment, improved quality of life and good human values through development research, effective use of local resources, extension of appropriate technologies and upgradation of skills and capabilities with community participation.
- Major research areas : (i) Animal Science
(ii) Agriculture & Forestry
(iii) Human Resource Development (Health & Socioeconomic development of Tribals & Women)
- Initial recognition : April, 1978

Income and R & D expenditure

(Rs. in lakhs)

Income	1992-93	1993-94
Donations received	94.72	85.07
Grants received	701.56	653.77
Other income	421.53	388.59
<i>Expenditure on R & D</i>	613.58	652.81

Infrastructural facilities

Land & Building	: Value : Rs. 394.59 lakhs
Equipment facilities	: Gross Value : Rs. 791.69 Lakhs
R & D Manpower	Qualification
Scientific & Technical	: Post Graduates 20
	Graduates 42
Social Sciences & Others	: Post Graduates 16
	Graduates 5
	Others 1

- Library facilities : BAIF Information Research Centre (BIRC) established in 1988 with an objective to provide information support services for various programmes with its facilities like. Online search, CD Rom, Micro fiche Reader Printer, 6,500 subscriptions & 7,000 Articles.

Major achievements claimed

- **Tecnologies Developed & Transferred for Upscaling & Commercialisation**

Animal Science

- (i) Method for deep freezing of sheep and goat semen has been standardised.
- (ii) A method was standardised to ensile the peapods alongwith sugarcane bagasse.
- (iii) Infectious bovine rhinotracheitis (IBR) vaccine has been developed and efficacy studies of the products in limited number of animals indicated the vaccine is giving protection upto one year. However, studies have been proposed for large scale trials under the same project for the next three years.
- (iv) IBR Diagnostic (ELISA based) has been developed and standardised in the form of kit i.e., ready to use at farm level. By screening serum, one can say whether the animal is positive or negative for the disease.
- (v) Advanced technique of polymerase chain reaction (PCR) has been standardised for diagnosis of IBR disease by detecting BHV-1 DNA (amplified product) from semen and swab samples of diseased animal.
- (vi) Causative agents of calf diarrhoea have been identified and isolated rotavirus and inactivated vaccine has been prepared. Laboratory trials are satisfactory and the vaccine is under testing in the cattle. Further characteristics of ther virus is in progress.
- (vii) Diagnostic test for early diagnosis of calf diarrhoea using faecal samples have been standardised which gives diagnosis at molecular level -ds RNA analysis of rotavirus.
- (viii) For pigs, swine fever vaccine has been developed from classical vaccine strain of swine fever virus in cell culture.
- (ix) Poloyvalent Foot and Mouth disease vaccine for pigs has been developed and the laboratory trials are very encouraging. Large scale field trials are going on.
- (x) Scale up of FMD vacine production suing membrane technology i.e., crossflow ultrafiltration system has been standardised. Large scale production of the same is in progress.
- (xi) For poultry, Newcastle disease (killed) vaccine which is more effective and able to give long-term immunity has been developed.
- (xii) For Prevention of Infectious bursal disease, which was wildfire till recent and is widely prevalent and causing mortality all over the country till today, effective intermediate strain based live vaccine has been developed and is used to control this malady. IBD (killed) vaccine using field virus as weel as standard strains has been developed and is being used widely to control the disease as well as for better maternal immunity.
- (xiii) Economically viable, highly effective combined NDV and IBD killed vaccine has been developed and is used in the poultry, today.
- (xiv) Concentration of toxoid by suing membrane filtration technology. All exo-toxins produced by el. welchii D are classified by using microfiltration followed by ultrafiltrations for concentration of toxoid. By this method, one can achieve much more purified vaccine with higher percentage of protection.

Agriculture, Forestry & Environment

- (i) Multipurpose tree species for different agro-climate conditions have been identified.
- (ii) Potentials of different agroforestry systems explored.
- (iii) Impact of various social forestry projects on the rural poor in maharashtra have been studied.
- (iv) A method was standardised for vegetative propagation of bamboo species. Different growth Regulators like NNA, IBA, Coumarin and Boric acid were tested on Bamboo culm cuttings.
- (v) Vermicomposting technique by using biogas effluent slurry and livestock feed refusals was standardised.
- (vi) A package of agronomic practices was developed for cultivation of cotton during winter season.
- (vii) Multipurpose version of H.S. vaccine i.e., Pasteurella vaccine has been prepared using Pasteurella multocida and Pasteurella haemolytica which protects pasteurellosis from both the species.
- (viii) New model of chawki worm transport device has also developed under sericulture research activity. The chawki worms can be very easily and comfortably carried in this new device container for even long distances.
- (ix) Mushroom spawn production and delivery system using disposable heat resistant polypropylene is developed and standardised.
- New Techniques/Methodologies Developed and Implemented
 - (i) Herbs India Ltd. : Their product called as "Zeetrees" as growth promoter for livestock (by reducing the stress of various organs) was tested on Silk Worms under a small research project.
 - (ii) Deep freezing of Sheep Semen was undertaken for M/s Nimbkar Agricultural Research Institute, Phaltan.
 - (iii) Trials on Herbal Galactagogue preparations were arranged for M/S Daglia Agro Vet Chemicals, Indore.
 - (iv) Project on cultivation of cotton in winter season carried out with the support of Mafatlal Industries Ltd., Bombay.
 - (v) Process has been standardised for freezing of semen of buffalo and cross-bred bulls.
 - (vi) Methodology was developed for sire evaluation based on data on small sized cross-bred herds.
 - (vii) The process for preparation of Lyophilised live vaccines of Marek's Disease using Micro-carrier culture Technology is standardised.
 - (viii) Improved version of H.S. Vaccine i.e., Pasteurella vaccine has been prepared using Pasteurella multocida and Pasteurella haemolytica which protects pasteurellosis from both the species.
 - (ix) Combined vaccine of IBR and pasteurellosis have been developed and tested in the laboratory, particularly in laboratory animals as well as in host animal cattle.
 - (x) Different vaccination schedules are being worked out by various combinations and permutations of vaccination programmes.
- Details of Seminars, Conferences Conducted
 - (i) National seminar on Recent Advances In Livestock Production Technologies, held at Pune from May 21-22, 1993.
 - (ii) Interaction workshop on Livestock feeding technologies, 28-29 January, 1994 at CRS, Uruli-Kanchan, Distt. Pune.

- (iii) Composite Training Programme for Rajasthan field veterinarians during 13th September—18th September, 1993 at BAIF Central Research Station, Uruli-Kanchan.
- (iv) National seminar on variability in quantity and quality of crop residues. 8-9th February 1994 held at National Institute of Bank Management (NIBM) Pune.
- (v) Group meeting of Indo-Dutch Bioconversion project staff, During Feb. 1994 at BAIF, Uruli-Kanchan.
- (vi) Annual workshop on All India Coordinated Research Project on Agricultural by products during 1992 at BAIF Urulikanchan.
- (vii) Group meeting of All India Co-ordinated Research Project on Forage Crops (ICAR) Organised by BAIF Development Research Foundation, at CRS, Urulikanchan 15-16th April, 1993.
- (viii) Joint seminar of Military Dairy Farm and BAIF on Cattle Breeding & Health strategies, at Urulikanchan in 1992.
- (ix) Interaction seminar on oestrous synchronisation at BAIF Urulikanchan.
- (x) DAE Symposium on "Vaccine production and animal Cell biotechnology-current status and future directions" during February 22-24, 1993, organised by BAIF Development Research Foundation and University of Poona at the University campus.
- (xi) State level and workshop on Role of NGO's in Rural Development and social forestry in April 1992 at Bhubaneswar & Lucknow.
- (xii) National workshop on Promotion of Non-wood forest produce through social forestry, Pune March, 1992.
- (xiii) A National Workshop on Multipurpose Tree Species for Agroforestry in India. April 6—9, 1994. Organised in Pune.
- (xiv) Workshop on "Freeze Drying technology for Immunobiologicals, Biofertilizers and Food preservation in tropics during 8th-9th February, 1993 at BAIF, Wagholi, Pune.
- (xv) IDRC-VAM Conference on "The use of Management of the mycorrhiza symbiosis in Forestry at Hotel Executive Ashoka, Pune during October 19-21, 1993.
- (xvi) national workshop on Role of Women in promotion of multipurpose tree species, Pune March, 1993.
- (xvii) Workshop on Micro Level Planning for Pune district at Pune in Nov. 1992.
- (xviii) State level and workshop on Role of NGO's in Rural Development and Social Forestry in April 1992, at Bhubaneswar & Lucknow.
- (xix) State level Workshop on Research Priorities and Social forestry Hasan, Karnataka, March 1992.
- (xx) A national Workshop on Sericulture Development in Non-traditional Areas, August, 19-21, 1993 held in Pune.
- (xxi) National workshop on Essential National Health Research Priorities and capacity building needs, Pune, Feb. 1992.
- (xxii) A workshop on "Linking Banks with Self Help Groups" Held in Vansda, Gujarat during 26-28, 1993.
- Any other achievements
 - (i) An arboretum of 100 medicinal plant species is established. It is planned to demonstrate the agrotechnology of raising medicinal plants to the farmer and thereby promote their cultivation and also

to create awareness amongst the farmers including women about the utility of herebal medicines.

- (ii) Gamplasm Collection and Aroboratom of Forestry species.
- (iii) On Arboratum of 700 Plant Species has been established at Ghansoli.
- (iv) Effect of treated effluent from petrochemical industries has been studied at Ghansoli in Thane.

Name and Designation of Senior Researchers

- Dr. D.V. Rangnekar, Vice-President
- Dr. B.R. Mangurkar, Vice-President
- Dr. A.L. Joshi, Principal Scientist
- Dr. S.B. Gokhale, Principal Scientist
- Dr. S.N. Singh, Principal Scientist



Bahiya Grass : A Host Plant for Primary Multiplication



Straw Filler and Sealer Unit for Frozen Semen

BIOVED RESEARCH SOCIETY

Address:

252 A/4A Om Gayatri Nagar,
Allahabad-211004,
U.P., India.

Background

- Status of the SIRO : Research Institution
- Year of establishment : 1989
- Major objectives :
- (i) To promote the researches in field of Science and Technology for development including researches in Life Sciences with object to encourage the adaptation of the recent technologies especially in the fields of Agriculture and allied sciences.
 - (ii) Publication of the research journals and reference books, research work and extension of appropriate technologies and upgradation of skills and capabilities within community.
 - (iii) Participate on farmers forum and demonstration units are important activities of the society.

Major research areas : Life sciences and Agriculture

Initial recognition by DSIR : November, 1994

Income and R & D expenditure

	<i>(Rs. in lakhs)</i>		
<i>Income</i>	1992-93	1993-94	1994
Donations received	1.11	1.20	1
Grants received	6.10	40.00	2
Other income	3.13	5.22	4
<i>Expenditure on R & D</i>			
● Capital	2.20	0.74	0
● Recurring	8.85	9.41	7

Infrastructural facilities

Land & Building : Area : 600 Sq. Yd.;
Value : Rs. 12.00 lakhs

Equipment facilities : Gross Value: Rs. 3.94 lakhs

R & D Manpower

	Qualification	No.
Scientific & Technical	Doctorates	4
Social Sciences and Others	Graduates	10
Library facilities	: Available	

Major achievements claimed

Research

For conducting research in different fields of bio-sciences and agriculture in a systematic and proper manner the Society has established its research wing on the M.L.N. Road, (Near Prayag Rly. Station). Department of Science and Technology, Government of India has granted 4 Research projects under the able guidance of different research scientists working in the Society's Research Centre findings.

Nematode problems of Pulse & vegetable crops in Allahabad:

Study on the assessment of losses and exploring possibilities of control of nema diseases by various methods has been completed and report of the findings submitted to D.S.T., the sponsoring agency of the project. The findings of the project conclude that only 20—30% farmers know about the plant diseases viz. insect and rodents etc. Only 10 percent farmers have heard about the word nematode (with special reference to animal nematode) and only 1.35% know about phytonematodes. They are not aware about the losses caused by nematodes around their crops. Ten villages in Kaurihar block and 12 in Holagarh block were selected for the demonstration of nematodes diseases and their control by organic amendments and nematicides because 76—100% losses were reported due to nematodes in vegetables and pulse crops in all the ten and twelve villages of the selected blocks. Most of the farmers are retaining infested plants vegetables and crops viz. bitter gourd, luffa and nanuwa etc. Four types of dominant nematode diseases are damaging these vegetable and pulse crops in the viz. root-knot nematode disease (2) the spiral nematode disease (3) stunt nematode disease and lance nematode disease.

The report of the project has been evaluated by the experts of DST and they have recommended a further extension of time for the project to cover all the tehsils of the district of Allahabad.

A study cum training a demonstration project titled "Bioecological resources management in fish production with special reference to parasito-coenosis" is being conducted.

Finding of the survey reveals that there is massive unemployment among the weaker section of society and people are willing to adopt fish farming as their principal occupation. There are vast resources for fish farming in these tehsils. The major problem of a aquatic weed, water hyacinth, is controlled by using 2,4 dichlorophenoxyacetic acid @ 2-5 kg/ha. the water hyacinth has nematicidal property hence an awakening amongst the rural people has been created to use it as an nutrient for agricultural fields. Water hyacinth eradicates the plant parasitic nematodes which drastically damage the vegetable crops.

Department of Science & Technology, Government of India approved project entitled '**Assessment of wilt disease problems of pulses crops and their control in Allahabad**, The work is being undertaken to integrate the management practices in following manner: application of organic matter along with fertilizer and bio-fertilizer on wilt disease incidence, effect of soil solarization, effect of seed inoculation of biopesticide against wilt incidence and screening of different pulse varieties against wilt disease. Better performance was recorded in pot amended with neem cake along with *Rhizobium* culture followed by neem cake, and mustard and

Rhizobium culture. Maximum plant growth was observed in case of amendment with neem cake with *Rhizobium* culture.

Seminar and Symposium

The society aims at holding seminar and symposium periodically on topics of national importance. the subjects would be current scientific problems.

A national seminar on "**Gandhi and Scientific Era**" was organised at Hindustani Academy Hall.

The Society has continuously been holding seminars and symposia. A national symposium on Prospects and Problems of Bio-Technology was programmed at Vigyan Parishad Hall in 1993. Another one on Pests of Agricultural Importance and their Management was organised in 1994.

A Science Exhibition was organised early this year during the Kumbh Mela.

Bioved Research Society also organised a national symposium on Ecotoxicological problems and their management in February and another on Problems of Transfer of Technology in May. In July Bioved organised a rare exhibition on letters, photos and books of national importance in the Gandhi Auditorium, Raj Bhavan, Lucknow.

Publication

The Society has published 15 reference books with high standard literature which have been widely acknowledged and quoted. It publishes three international, biannual journals—'**Bioved**' dealing with biological advances, '**Current nematology**' exclusively dealing with plant parasitic nematodes and '**New Agriculturist**' devoted to advances in Agricultural Sciences. All these three journals have been accepted for abstracting and indexing by CAB international abstracting unit, U.K. vide CABA Accessions.

The society has a well equipped spacious laboratory with an open area to grow and observe related flora and fauna in their natural condition. The Laboratory is equipped with hydrobiological analysis kit, advance research microscope, oven, pH meter, balance, water bath, sets of sieves for nematode extraction, autoclave, freezer centrifuge (electrically as well manually operated), computer and well equipped culture room, having facility to work an active group of scientists simultaneously at a time. It has cyclostyling machine, photocopier and typing machines. A green house has been developed containing pot experiments with infected as well as healthy plants.

Name and Designation of five Senior Researchers

- Dr. A.L. Chaudhary, Chairman, ASRB, Lucknow.
- Dr. S.K. Joshi, D.G., CSIR, New Delhi.
- Dr. Punjab Singh, Joint Director (Research) IARI, New Delhi.
- Dr. Kirti Singh, Member, ASRB, New Delhi.
- Dr. K. C. Pandey, V.C. Meerut University, Meerut.

CURRENT SCIENCE ASSOCIATION

Address:

Current Science Association,
C.V. Raman Avenue,
Sadashivanagar Post,
Bangalore 560 080.

Background

Status of the SIRO

: The current Science Association was founded in 1932 as an Association.

Major objectives

- : (i) To publish a Science journal named "CURRENT SCIENCE", specifically devoted to the study and dissemination of information and knowledge of all branches of natural science and their impact on society and life;
- (ii) To issue special numbers, memoirs and books relating to various sciences in pure and applied branches;

Initial recognition by DSIR

: 1995

Income and R & D expenditure

Income	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
Donations received	—	0.24	0.28
Grants received (DST)	10.00	9.00	9.50
Grants from others	00.62	3.50	3.80
Other income (Subs. etc.)	12.40	12.76	13.00

Expenditure on R & D

● Recurring (Publication)	20.80	25.55	25.20
● Recurring (Admn. etc.)	1.30	1.50	1.53

Infrastructural facilities

Equipment facilities : 0.70 lakh
for 1 computer & printer

List of sophisticated equipment : One personal computer and one printer

Library facilities : A science library is established since 1954

Major achievements claimed

The main activity of the Association is the publication of the journal, "CURRENT SCIENCE". The journal is published from Bangalore every fortnight and contains articles and research papers on all branches of Natural Science.

Current Science is a premier science journal and enjoys the greatest popularity among the science journals both in India and abroad. Scientists regard it a matter of prestige to have their papers published in Current Science. The journal is listed in the "Science Citation Index" data base the world's main repository for science citation information. The journal reaches most institutions and universities in India.

Current Science has also brought out special numbers/books, some of which are—

- (i) The Ramachandran Map, Protein and peptitide
- (ii) Waves and Symmetry
- (iii) Celebration of Colour in Astronomy
- (iv) Radio Astronomy in India
- (v) Clinical Research and Health care in developing countries
- (vi) Biotechnology in India
- (vii) Remote Sensing for Natural Development
- (viii) Earth cosmic pay work in India
- (x) Seismology in India—an overview
- (ix) Quaternary period in India.

Name and Designation of five Senior Researchers

Many distinguished scientists have served in the Working Committee. The present incumbents are

- Dr. R. Chidambaram, Chairman, Atomic Energy, Bombay
- Prof. K. Kasturirangan, Chairman, SPACE, Bangalore
- Dr. P. Rama Rao, Secretary, DRDO, New Delhi.
- Dr. M. S. Valiathan, Vice-Chancellor, Manipal Academy of Higher Education, Manipal.
- Dr. R. A. Mashelkar, Director General, CSIR, New Delhi.

FREDRICK INSTITUTE OF PLANT PROTECTION AND TOXICOLOGY

Address:

Padappai 610 301
Distt. Chingai MGR.

Background
Status of the SIRO

: FIPPAT's research activities are governed by a RESEARCH COUNCIL comprising of eminent scientists of International repute in the field of Toxicology, Entomology, Chemistry and Agronomy. This council scrutinizes and critically evaluates the work done as well as enlightening the scientific community of the latest development and the technical knowhow in the field.

Apart from doing the regular research work FIPPAT also trains and provides various facilities for research scholars under M.Phil and Ph.D programme. So far FIPPAT has produced 12 Ph.D's in the fields of toxicology, Entomology, Chemistry and Plant Protection.

FIPPAT has a collaborative treaty with HIROSHIMA UNIVERSITY, JAPAN. Under this Scientist exchange programme HIROSHIMA UNIVERSITY under the guidance of the Government of Japan awards MONBUSHU SCHOLARSHIP to one research scholar in FIPPAT every year under the Ph.D. programme to undergo a 18 months training in the field of Molecular Biology, genetics and cancer.

With the latest advancement in testing, FIPPAT is now concentrating in the field of Invitro toxicology, thereby trying to avoid animals in testing. As a part of this, the Institute is entering into a joint collaborative treaty with CENTRAL SCIENCE LABORATORY U.K. in co-operation with the BRITISH COUNCIL, India. This joint venture will open the avenue for improved research and place the Institute in the highest level of toxicology testing by introducing this Invitro cell testing in India for the first time.

Major objectives

: To provide hi-tech and sophisticated research and testing facilities in par with International standards to the manufacturers of Pesticides, Insecticides, Agrochemicals, Fertilizers and Pharma products.

- Major research areas** : (i) To undertake applied research work in the field of crop protection and detection of toxicity of various chemicals and compounds submitted for testing under laboratory as well as field conditions by various sponsors.
- (ii) To undertake from time to time, research projects under the support of governmental agencies such as DAE, DST, ICAR, ICMR, CSIR within the institutional objectives.

Infrastructural facilities:

Equipment facilities : Gross Value : (approx. Rs. 20 Lakhs.)

List of sophisticated equipment

High Pressure Liquid Chromatography

Gas Chromatography

UV spectrophotometer

Computers & Laser 4L Jet

R & D Manpower

	Qualification	No.
Scientific & Technical	Doctorates	11
	Post Graduates	16
	Graduates	8
	Others	36

Library facilities : The library contains about 6000 books and regularly gets 100 periodicals (national as well as international) in the areas of agriculture, energy and animal husbandry.

Name and Designation of five Senior Researchers

- Dr. P. Balakrishna Murthy, Director & Head, Dept. of Toxicology
- Dr. K.P. Mathai, Head, Dept. of Pesticide Chemistry
- Dr. K. Sadasivan Pillai, Manager/Quality Assurance Unit
- Dr. M. Parthiban, Sr. Scientist—Entomology
- Dr. A. Ramesh, Sr. Scientist—Pesticide Chemistry

INDIAN SOCIETY OF BIO-SCIENCE & ENVIRONMENT (Institute of Biosciences)

Address:
117/K/136,
Geeta Nagar,
Kanpur.

• Dr. K.S. Thirumalaisamy, Vice President (Cane)

Background

Year of establishment : 1991

Major objectives:

- (i) To evaluate safety of chemicals used in industry, agriculture and day to day life.
- (ii) Studying the mode of action of chemical pollutant and develop relevant scientific know-how to either detoxify or discard it.
- (iii) Collection and dissemination of information on environment pollutants (hazardous chemicals) and suggest natural preventive/remedial measure(s) specially for pest control.
- (iv) Identification and isolation of plant material, expected to contain biologically active substances.
- (v) Testing the effectiveness of various plant materials as repellent, antifeedant and toxic to important pest in agriculture, medicine and veterinary.
- (vi) Testing of pesticide formulations.
- (vii) Pollution status monitoring and analysis of Air and Water pollution, Effluent treatment.
- (viii) Training of farmers, entrepreneurs and researchers.

Initial recognition by DSIR : 1993

Income and R & D expenditure

<i>Income</i>	<i>1992-93</i>	<i>1993-94</i>	<i>1994-95</i>
Donations received	0.01	0.05	0.12
Grants received	10.01	7.83	3.91
Other income	0.75	-	-

Expenditure on R&D

• Capital	10.01	7.83	3.91
• Recurring	1.20	1.20	1.20

Infrastructure facilities

Land & Building : Value : 25 lakhs
Equipment facilities : Gross Value : Rs. 15 lakhs
Sophisticated equipment H.P.L.C.

R&D Manpower

	<i>Qualification</i>	<i>Full Time</i>	<i>Part Time</i>
Scientific & Technical	Doctorates/ Post Graduates	9	3 Labour
Social Sciences & Others	Post Graduates/ Graduates	2 -	

Major achievements claimed:

Achievements are claimed in following areas:

- (i) Identification and isolation of plant material having biologically active substances.
- (ii) Plant materials having the properties as repellent, antifeedant and

(iii) Pollution status monitoring and analysis of water polluting & effluent treatment.

Name and Designation of Senior Researchers

- Dr. R.K. Pandey (Director)
- Dr. Navneet Kumar
- Dr. Sheetala Prasad
- Dr. Anurag Misra
- Dr. Sonali Roy Chaudhary

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JAI RESEARCH FOUNDATION SOCIETY

Address:

P.O. Valvada
Distt. Valsad-396 108

Background

Year of establishment : 1977
Major objectives : To assess safety of agrochemicals, pharmaceuticals and industrial chemicals.
Major research areas : Research in the field of Toxicology, Pesticide and Pharmaceutical Chemistry, Entomology, Plant Pathology, Weed Sciences, Microbiology.
Initial recognition : April, 1988

Income and R & D expenditure

			(Rs. in lakhs)
Income	1992-93 (9 months)	1993-94 (12 months)	1994-95
Donations received	Nil	Nil	Nil
Grants received	Nil	Nil	Nil
Other income	Nil	Nil	Nil

Expenditure on R & D

• Capital	5	73	—
• Recurring	10	47	74

Infrastructural facilities

Land & Building : Total area including building 28 acres.

Equipment facilities :

List of sophisticated equipment :

—GC/MS; GC; HPLC; FTIR; UVVIS spectrophotometer; Nikon Optiphot-2 microscope (with CCTV and camera attachment; phase contrast); Facility for inhalation toxicology.

R & D Manpower

	Qualification	No.
Scientific & Technical	Doctorates/ Post Graduates/ Graduates	32
Social Sciences & Others	Post Graduates/ Graduate	6
Others		27

Library facilities : A separate library facility is Available.

Major achievements claimed :

- New techniques/methodologies developed and implemented : (i) Developed a technique for evaluating smoke generators in Peet-Grady Chamber.

- (ii) Started ecotoxicological studies of agrochemicals/industrial chemicals based on OECD guidelines for the first time in the Institute.
- Research papers/reports published : 25
- Seminars/Conferences attended :
 - (i) Organised Second AZRA Conference on "Recent trends in plant, animal and human pest management; Impact on environment," December 1994, Madras.
 - (ii) Seminars/conferences attended : 20
- Awards won :
 - (i) The Best Research Presentation Appreciation Certificate for research paper presentation at 14th Annual Session of the Academy of Environmental Biology, November 1993 at Indore.
 - (ii) Young Scientist Award at the second AZRA Conference on "Recent trends in plant, animal and human pest management : Impact on environment", December 1994, Madras.

Name and Designation of five Senior Researchers :

- Dr. B.V. David, (Director)
- Dr. M.V. Moorthy (Head, Dept. of Toxicology)
- Dr. C. Tamilselvan Head, Dept. of Pesticide Chemistry)
- Mr. K.S. Grover (Quality Assurance Officer)
- Dr. G.R. Choudhari (Senior Research Officer)



Clinical Analyser

(1)

KALYANI GORAKSHAN TRUST**Address:**

240/F, Shaniwar Peth,
Kalyani Building,
Karad-415 110,
Distt. Satara.

Background**Status of the SIRO**

: Public Charitable Trust

Year of establishment

: June 27, 1859 vide the Bombay Public Trust Act 1950, Registration No. E-81, Satara

Major objectives

- : (i) To study economic parameters of cow and buffalo herd and the related studies concerning nutrition, diseases, production of fodder and commercial products from milk.
- (ii) Greening of waste lands by establishing horticultural estate using indigenous and exotic germplasm of fruits, vegetables and flowers.
- (iii) Understanding the water requirements of various horticultural crops by using various irrigation systems such as drip and sprinkler irrigation systems.
- (iv) Educating farmers with advanced technologies developed for various fruit, vegetable and flower crops.
- (v) Conducting demonstrations on new high yielding varieties/hybrids of cereals, pulses and oilseed crops for the benefit of farmers.

Major research areas

- : (i) Germplasm collection of various horticultural crops and study their suitability for local condition.
- (ii) Evolving schedules of manuring, plant protection, efficacy of growth regulators and irrigation requirements for low cost and with a wider cost benefit ratios.
- (iii) Studies to work out and standardised package and practices for horticultural crops grown in different systems.
- (iv) Evolving technology to stipulate appropriate catch crops reared under rainfed, partially irrigated and totally irrigated fruit tree crops.
- (v) Locating economical dryland fruit, vegetable and flower crops.
- (vi) Establishing suitable inter-cropping systems in fruit crops.
- (vii) Developing production technology for coconut for interior areas away from coast.

(2)

Initial recognition by DSIR : 1990

Income and R & D expenditure

	1992-93	1993-94	(Rs. in lakhs) 1994-95
<i>Income</i>			
Donations received	4.03	3.35	1.00
Grants received	1.15	37.44	22.30
Other income	60.81	11.75	8.51
<i>Expenditure on R & D</i>			
• Capital	41.39	17.41	4.77
• Recurring	3.53	59.92	28.19

Infrastructural facilities

Land : 160 hectares (wasteland)
developed about 100 hectares. :
Value : Rs. 16.50 lakhs

Building : Farm Building of 1800 sq. ft.;
(Value : Rs. 3,20,400)

List of sophisticated equipment : Flame Photometer
Spectronic 20
Bright Sunshine Hours Recorder
Self Recording Rain Gauge
Thermograph
Hydrographs
Anemometer.

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical	Doctorate/ Post Graduate	—	6
Social Sciences & Others	Graduate/ Diploma Holder	7	—

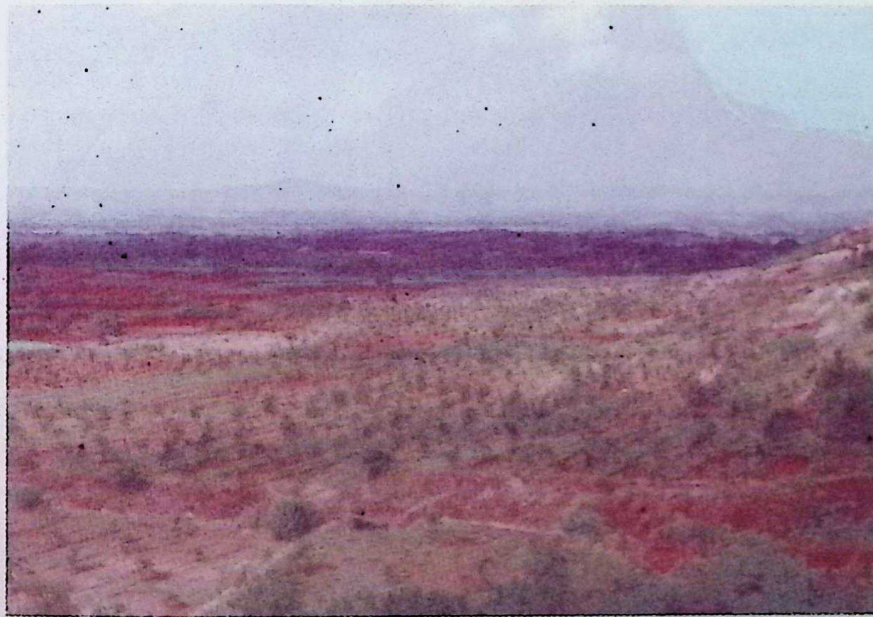
Library facilities : Availed from KVK

Major achievements claimed

- (i) The project was initiated with plantation of horticultural crops, viz, Ber, Pomegranate, Mango, Tamarind, Aonla, Drumstick, Coconut, Sapota, Custard Apple and the orchards have been established with creation of artificial profiles on wasteland with 6 of soil layer. Intercropping systems, using advanced technology is adopted. Many of the fruit crops have started fruiting.
 - (ii) Demonstrated scientific methods of soil, water conservation and crop management practices in a mini watershed on a large scale.
 - (iii) Established practices of growing chillies, groundnut, sunflower, soyabean, gourds, crop in wide spaced long duration period bearing horticultural crops, viz, Ber, Pomegranate, Mango, Coconut, Tamarind and the like.
 - (iv) Introduced soyabean and popularised it among the farmers.
 - (v) Supplied grafts and seedlings of fruit crops.
 - (vi) Supplied seeds of oilseed and pulse crops.
- Research Papers/Reports Published : 55
 - Seminars/Conferences —Organised : 3
 - Attended : 11

Name and Designation of five Researchers

- Dr. V.S. Khuspe Cross management
- Dr. D.P. Bhore Horticulturist
- Shri V.G. Dhawane Seed Technology
- Shri N.T. Aware Social Science
- Shri P.Y. Ambre Animal Husbandry & Dairy



Watershed Development with Horticultural Plantation

KARNATAKA INSTITUTE OF APPLIED AGRICULTURAL RESEARCH (KIAAR)

Address:

The Karnataka Institute of Applied
Agricultural Research,
Tal: Mudhol Distt: Bijapur,
SAMEERWADI-587 316 (Karnataka)

Background

Year of establishment : 1972
Major objectives : (i) To transfer the technology developed at the Institute for the benefit of the farming community.
(ii) To educate persons in improved Agricultural Technology.

Initial of recognition : 1972

Income and R & D expenditure

	1992-93	(Rs. in lakhs)
<i>Income</i>		
Donations received	1.25	
Grants Received		
Other income	6.20	
<i>Expenditure on R & D</i>		
● Capital	—	
● Recurring	8.43	

Infrastructural facilities

Land & Building : Value : Rs. 73 lakhs

List of sophisticated equipment : Laboratory sugarcane crusher,
Laboratory shredder,
Laboratory tissue press,
Thin layer chromatography unit,
Abbe's Refractometer
Binocular Compound Microscope.

Agri Machinery : Hot Water Treatment Unit,
Power Sprayer,
Sprinkler Irrigation set,
Soil Moisture meter,
Hot Air treatment Unit.

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical	Doctorates	—	3
	Post-Graduates	2	—
	Graduates	3	—
	Others	3	—

Library facilities : The library is in existence from the year 1972 and is having 263 No. of book of Sugarcane Agriculture, 204 No. of books on Engineering & 479 No. of book on Manufacturing.

Major achievements claimed

- Technologies developed and transferred for upscaling/commercialisation. : (i) Identified sugarcane varieties CoC 671 & CoC 92061 suitable for this area.
(ii) Confirmed the efficacy of Bactin Bacterial culture for preparation of Humas.
- Technologies developed and ready for upscaling : Confirmed that soyabean intercropping beneficial for improving soil productivity and additional Income.
- New Techniques/Methodologies developed and implemented. : Moist Hot Air Treatment at 54°C for 2-½ hours duration is beneficial for avoiding the disease like G.S.D. etc. and also for pre-generation of the variety.
- Research papers/Reports published. : (i) Performance of early variety in sugarcane by R. B. Khandagave and P.G. Satpute.
(ii) "Effect of Introduction of Early Maturing Varieties in Boosting Recovery" by P.G. Satpute, V.B. Kembhavi and P.M. Kulkarni.
(iii) A monograph on Mechanical Harvester for cane by T.L. Raghavan.
- Seminars/Conferences attended/organised. : The Deccan Sugar Technologists Association (India) Pune 43rd Annual Convention 1994 and SISSTA one day Seminar at Belgaum attended by P.G. Satpute.
- Awards won : The KIAAR Institute is the advising body of Godavari Sugar Mills Ltd., Sameerwadi for their Agricultural, varietal planning etc. G.S. Mills Sameerwadi won the Parth Sarathi for carrying out a best development activities in their area of operation from SISSTA for the year 1991-92.
- Any other : The sugarcane cultivators Educational tour was organised by the Institute from 26-1-1994 to 1-2-1994 and visited following mentioned Institutes.
(i) M/s. Jain Irrigation Systems Ltd., Jalgaon.
(ii) Vasantdada Sugarcane Research Institute, Pune.
(iii) Central Sugarcane Research Station, Padegaon. for bringing the awareness of the modern techniques to the cultivators.

Name of five Senior Researchers

- Dr. D.G. Hapase
- Dr. K. Perumal
- Dr. R. Narasimhan
- Mr. P.G. Satpute
- Mr. R.B. Khandagave

Ado
Dra
E/4,
Pun

MAHARASHTRA STATE GRAPE GROWERS ASSOCIATION

Address:

Draksha Bhavan,
E/4, Market Yard,
Pune-411 037.

Background

Year of establishment	:	1960
Major objectives	:	To carryout research and development in respect of grape cultivation and post-harvest management of grapes.
Major research areas	:	Grape cultivation and Post-harvest Management of grapes.
Initial recognition	:	February, 1982

Income and R & D expenditure

		(Rs. in lakhs)		
		1992-93	1993-94	1994-95
<i>Income</i>				
Donations Received	:	22.77	16.54	16.23
Grants Received	:	Nil	Nil	Nil
Other Income	:	15.17	19.52	19.68
<i>Expenditure on R&D</i>				
• Capital	:	1.57	2.40	0.89
• Recurring	:	17.82	12.37	4.88

Instrumental facilities

Land & Building	:	Land area: 4.21 ha. Its value is more than Rs. 10/- lakhs. A building of 6600 sq. ft. valued at Rs. 3.58 lakhs is available. It houses the Research Laboratory of the Association.	
Equipment facilities	:	Gross value: Rs. 11.48 lakhs.	
List of sophisticated equipment	:	- Atomic Absorption Spectro-photometer - Gas Chromatograph - Spectronic - 20 D Spectrophotometer	

R&D Manpower

	Qualification	Full time	Part
Scientific & Technical	Doctorates	1	2
	Post Graduates	4	-
	Graduates	2	-
	Others	7	-

Library facilities	:	The Association has more than 300 scientific books in its Library. Similarly the Association is contributing to about 20 Foreign & Indian scientific Journals.
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Major achievements claimed

- Technologies developed & transferred for upscaling/ Commercialisation. : (i) Preparation of Gibberellic Ac (in collaboration with NCL).
: (ii) Increasing shelf-life of Grapes by Gamma Irradiation (in collaboration with BARC).
(iii) New Trelling System.
- New techniques/ methodologies developed and implemented. : (i) Keeping of canes per sq. ft. area
(ii) Keeping no. of leaves after bunch
(iii) Making berries oval.
(iv) Development of sub-cane.
(v) Quantity of water to be applied grape-vine in different months.
(vi) Fixing of fertilizer doses.
(vii) Quantity of Urea phosphate, and BA Uracil.
(viii) Selection of superior clones and standardisation of techniques for getting their optimum yield.
- Research papers/ Reports published : 9 papers were published during 1993-94. In addition 12 issues of Draksha Vrutta and two issues of Maharashtra Journal of Horticulture were published.
- Seminars/Conferences attended/Organised : 11 Regional Seminars and 1 State Level Seminar was organised. One Seminar on Chemotography was attended.

Name and Designations of five Senior Researchers

- Dr. B. P. Patil, Research & Development Officer
- Dr. J. C. Anand, Formerly Head, Div. of Post-harvest, IARI, New Delhi.
- Dr. K. S. Pharande, Formerly Dean, Faculty of Agriculture, MPAU, Rahuri.
- Dr. J. M. Khillari, Asso. Prof., Soil Science & Agril. Chemistry, (Micronutrient Scheme).
- Prof. B. G. Bhujbal, Prof. of Horticulture, Regional Fruit Research Station.

MAHYCO RESEARCH FOUNDATION

Address:

19, Rajmahal,
84, Veer Nariman Road,
Bombay-400 020.

Background

- Status of the SIRO : Company Registered U/S 25 of the Companies Act, 1956.
- Year of establishment : January, 1987
- Major objective : To promote scientific research in agriculture
- Major research areas : Research in hybrid brassicas, hybrid rice etc.
- Initial recognition by the DSIR : 1989

Income and R & D expenditure
(Rs. in lakhs)

<i>Income</i>	1992-93	1993-94	1994-95
Donations received	Nil	Nil	Nil
Grants received	Nil	Nil	Nil
Other income	132.90	105.47	131.99

Expenditure on R & D

● Capital	5.00	34.21	39.33
● Recurring	32.09	19.67	24.37

Infrastructural facilities

- Land & Building : Area: 108.75 Acres;
Value : Rs. 105.05 Lakhs
- Equipment facilities : Gross Value : Rs. 14.83 Lakhs.
- List of sophisticated equipment : A Modern Bio-tech Lab is being equipped at Hyderabad. 19 sophisticated imported equipment & 14 indigenous equipment are being ordered.

R & D Manpower

	Qualification	Full time
Scientific & Technical	Doctorates	
	Post Graduates	5
Social Sciences and Others	Graduates	8
	Diploma Holder	13

Major achievements claimed

- Technologies developed and transferred for upscaling/commercialisation : *Hybrid Rice Programme*
Helped in the development of:
 - Male sterile lines
 - Restorer lines
 - Developed Hybrid Rice suitable for early to medium duration & resistant

to major diseases & pests with acceptable grain quality.

- (d) Seed production of parental lines work on basic problems related hybrid rice breeding & seed production.
- (e) Fill in the gaps which shall otherwise hinder the progress of hybrid rice research.

Brassica Breeding Programme

Development of high yielding hybrids & varieties of rape seed mustard with high oil content & good cooking quality.

Different trials on:

- (a) High yielding along with high oil content genotypes.
- (b) High erucic acid coupled with good yield potential genotype.
- (c) Low erucic acid genotypes.
- (d) Hybrids on CMS systems.
- (e) Early maturity along with good yield potential

- New Techniques/methodologies developed and implemented : Techniques in rapid cycling in brassicas adapted.
- Seminars/Conferences attended/organised : (a) An international seminar on hybrid rice organised (1992)
(b) Two Scientists attended International Conference in Manila 1992, Six Scientists deputed for National Conference & Seminars 1992, four in 1993-94 & three in 1994-95.
(c) Four Scientists deputed for National Training Programme in 1992 & three in 1993-94.
(d) Two Scientists attended International Training Programme IRRI, Manila (1994)

Name and Designation of Senior Researchers

- Dr. Amarjit Singh, Research Consultant
- Dr. K. K. Jena, Research Coordinator
- Mr. V. P. Ratnalikar, Asstt. Manager Research
- Mr. Lalji Pande, Scientific Officer
- Dr. I. Suresh, Scientist

MUKUND FOUNDATION FOR AGRICULTURAL RESEARCH

Address:

41-F, Venkatasamy Road,
R.S. Puram West,
Coimbatore - 641 002

Background

Year of establishment : 1986

Major objectives : Promote Scientific Research of basic and applied research in the field of horticulture and agriculture for the benefit of small & marginal farmers & cater to the needs of the agro-based industries particularly the papaya fruit based industries like papain refineries for export trade.

Income and R & D expenditure

Income	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
Donations received	5.55	2.50	—
Grants received	Nil	Nil	Nil
Other income	3.95	2.95	5.93
Expenditure on R & D:			
● Capital	10.48	1.50	5.30
● Recurring	3.83	6.95	7.86

Infrastructural facilities

Land & Building : Area — 14.93 Acres;
Value : Rs. 17.26 lakhs

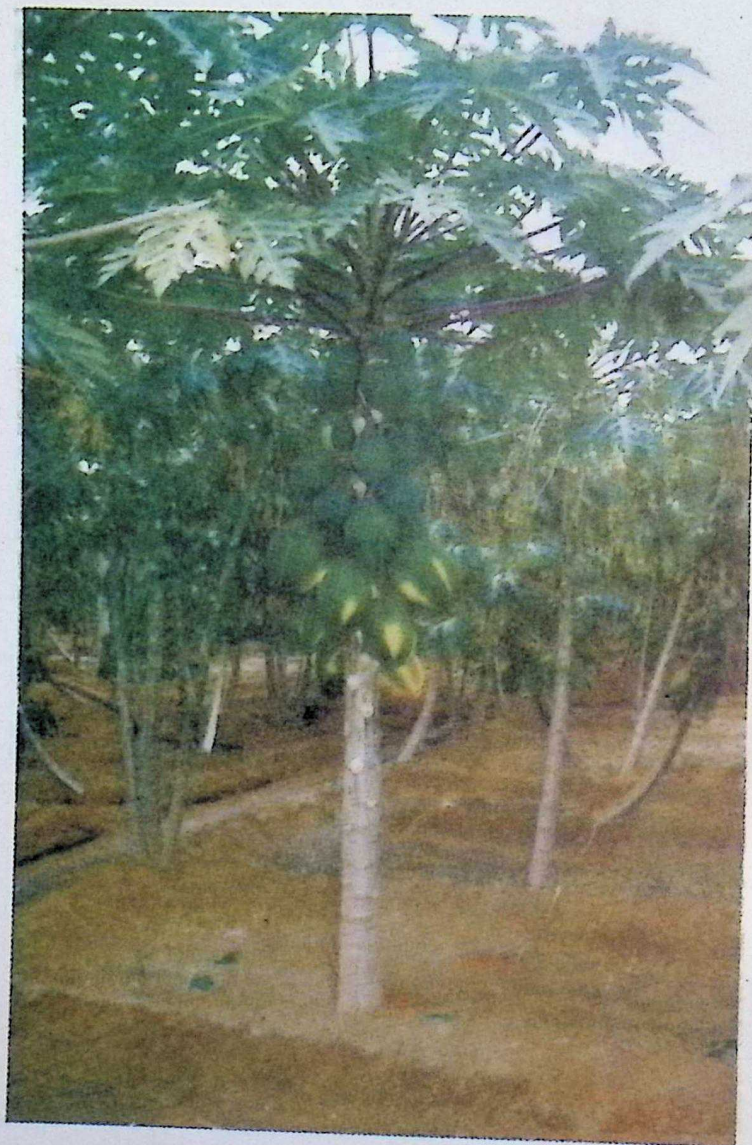
Equipment Facilities : Gross Value : Rs. 22.68 lakhs.

Major achievements claimed
Improvement of Papaya

- (i) The major thrust area of research is focussed on papaya for which the foundation is well known in the entire country. The Foundation has developed a dioecious papaya released as 'MF-1' which is dual purpose suitable both for quality fruits and papain derived from the latex. The superiority of MF-1 papaya is reflected from its popularity among all the papaya growing states of the country.
- (ii) The Foundation has also developed 8 new papaya selections comprising dioecious and gynodioecious (bisexual) forms some of which are having attractive red flesh which fetches premium price to the growers.
- (iii) Active seed production programme is underway since 1987 to cater to the needs of the entire country to the extent possible. A quantity of 124.610 kg of elite seeds developed through sib-mating have been supplied during 1993-94.
- (iv) The foundation offers free training to the farmers on papain extraction and various aspects of crop-husbandry free of cost.
- (v) The foundation sponsored a Post-graduate fellowship to a horticultural student of T.N.A.U. for research in papaya during 1992-93.

Name of Researchers

- Mr. Arulmurugan
- Miss. S. Chandaika



Papaya fruit cultivation

NATIONAL ACADEMY OF AGRICULTURAL SCIENCES

Address:

Avenue II, IARI Campus, Pusa,
New Delhi-110 012.

Background

- Status of the SIRO : Registered Society
- Year of establishment : June 1990
- Major objectives :
- (i) to promote ecologically sustainable agriculture
 - (ii) to recognise and support excellence in scientific research in the field of agriculture performed by the individuals scientists and by interdisciplinary teams
 - (iii) to provide promising scientists with the conditions necessary for the advancement of their work
 - (iv) to promote contact among research workers in different institutions and organisations within the country and with the world scientific community
 - (v) to secure and manage funds and endowments for the promotion of agricultural sciences
 - (vi) to publish documents and specific studies including those intended for policy makers for the advancement of agricultural research and development
 - (vii) other activities relevant to the accomplishment of the above goals in public interest

Initial recognition by DSIR : January, 1995

Income and R & D expenditure

		(Rs. in lakhs)		
		1992-93	1993-94	1994-95
<i>Income</i>				
Donations Received	:	1.55	1.00	0.05
Grants Received	:	18.00	18.00	44.50
Other Income	:	0.82	4.12	1.90
<i>Expenditure on R&D</i>				
• Capital	:	-	-	-
• Recurring	:	7.51	11.71	21.50

Infrastructural facilities

- Land & Building : Area : 7500 sq. ft.
- Equipment facilities : Gross Value : (Rs. 18.11 lakhs)
- List of equipment : Computers & Fax Machine
- Library facilities : Information/Library unit is being set up.

Library facilities : Information/Library unit is being set

R&D Manpower

	Qualification	Full Time
Scientific & Technical	Doctorates	1
	Post Graduates	1

Major achievements claimed

- (i) symposium on "Population, Natural Resources and Food Security" held in 1991 in which important topics of current interest like land and water, biodiversity, animal resources, energy and atmosphere were discussed.
- (ii) Agricultural Science Congress held in November 1992 in New Delhi which was inaugurated by the Hon'ble Prime Minister of India with the Minister of Agriculture in the Chair. Three national symposia on the following topics were held during this Congress:
 - Global Climate and Agriculture
 - Rio Agenda 21-Priorities for Agricultural Research
 - Capital requirements for modernisation of Agriculture.
- (iii) In collaboration with the M.S. Swaminathan Research Foundation, Madras, the Second Asia Pacific Conference on Agricultural Biotechnology was organised during 6th to 10th March 1993. Participants from 11 countries in the Asia Pacific Region attended besides representatives from the World Bank, FAO, UNIDO, UNEP, GATT/WTO, IRRI, Rockefeller Foundation and other organisations.
- (iv) The Second Agricultural Science Congress was organised in Hyderabad from 19th to 21st January, 1995. This was hosted by the Andhra Pradesh Agricultural University. Three symposia on the following topics were organised during the Congress.
 - National Water Policy
 - Vector Biology
 - Integrated On-farm and Off-farm Employment
- (v) A workshop on "Animal Sciences Research and Development" was held in April 1995 at the Punjab Agricultural University, Ludhiana.
- (vi) The Second International Crop Science Congress is being hosted by the Academy in India in 1996. A National Organising Committee, a Core Group and a Programme Committee have been constituted to plan and organise this Congress at New Delhi in November 1996. The Programme for the Congress has been finalised.
- (vii) Recognition and supporting excellence in Scientific research through award of medal to leading scientists for their outstanding contributions in the field of Agriculture. The details of award made are:

Dr. B. P. Pal Medal Awarded to:

- (i) Dr. N. Parthasarathy (1992)
- (ii) Dr. V. Kurien (1995)

(i) Dr. S.V.S. Sastry (1992)

(ii) Dr. J.S. Kanwar (1995)

Dr. K. C. Mehta Medal awarded to:

(i) Dr. T. S. Sadasivan (1995)

The Society has published & 6 research papers/reports.

Names of the Senior Scientists

- Dr. S.K. Sinha
- Dr. Anupam Varma
- Dr. N.C. Ganguli

NATIONAL AGRICULTURAL & SCIENTIFIC RESEARCH FOUNDATION

Address:

23/24, Radha Bazar Street,
Calcutta-700 001.

Background:

- Status of the SIRO : Association
- Year of establishment : 1985
- Major objectives : (i) Production of variants of Tea through Tissue Culture.
(ii) Feasible protocol preparation of different micropropagation of different crops.
(iii) Feasible micropropagation of Jojoba - a desert plant.
(iv) Hardening for getting 100% success in micropropagation industry.
- Major research areas : Tissue culture, Anther culture, Protoplast culture, Micropropagation, Mutation studies, Cytology and Green house techniques.
- Initial recognition as SIRO : November, 1986.

Income and R & D expenditure:

		(Rs. in lakhs)	
Income	1992-93	1993-94	1994-95
Donation received	17.08	19.55	6.36
Grants received	Nil	Nil	Nil
Other income	13.18	13.19	3.89
Expenditure on R & D :			
● Capital	11.12	33.06	71.08
● Recurring	13.02	10.36	15.87

Infrastructural facilities

- Land & Building : Value : Rs. 98.10 lakhs
- Equipment facilities : Gross Value : Rs. 43.02 lakhs.
- R & D Manpower

	<i>Qualification</i>	<i>Full time</i>
Scientific & Technical	Doctorates	1
	Post Graduate	1
	Graduates	5
	Others	1
Library facilities	: Several books relating Biotechnology, Tissue culture & Commercial micropropagation, Green house Gardening, Orchid growing, Floriculture Tropica, Exotica, and Journals like Plant cell tissue and organ culture, Agricell American orchid society bulletin, etc are available.	

Major achievements claimed

- Technologies developed and transferred for upscaling/commercialisation.
 - (i) Aneuploid strain of Tea.
 - (ii) 100% viable protocols for Banana, Anthurium, Spathiphyllum, Ficus, Orchid along with their hardening in Greenhouse.
 - (iii) Mushroom — Paddy straw and oyster — large scale production.
- Technologies developed and ready for upscaling.
 - (i) Micropropagation of jojoba, carnation, petunia, papaya, Gerbera and other crops.
 - (ii) Potato micro tuber production.
 - (iii) Gladioli corn production.
- New techniques/methodologies developed and implemented.
 - (i) Minimisation of labour cost during transfer.
 - (ii) Minimisation of media amount with maximized production.
 - (iii) Commercial hardening of 100s of plants at a time.
 - (iv) Orchid floriculture in Calcutta.
 - (v) Mutant production of tea both in vivo and in vitro.
- Research Papers/ Reports Published : "Commercialisation of Plant Tissue Culture : Its Implication in Eastern Zone" sent for publication.
- Seminars/Conferences attended/organised : "Exposition and Workshop on Micro-propagated Commercial Plants" sponsored by West Bengal Academy of Science & Technology held at Indian Institute of Chemical Biology, Calcutta on 8th & 9th April, 1994 attended by all the scientists of the Lab. along with display of different micropropagation stages of various crops. Paper entitled "Commercialisation of Plant Tissue Culture in Eastern Zone of India" was presented by Dr. Mrs. Beena Agarwal. A Television & Radio programme was held on the same topic.

Name and Designation of Researchers

- Dr. (Mrs) Beena Agarwal, Officer-in-charge
- Dr. (Mrs) Maitreyli Banerjee, Scientist
- Dr. (Mrs) Madhuparna Banerjee, Scientist

NATIONAL HORTICULTURAL RESEARCH AND DEVELOPMENT FOUNDATION

Address:

Bagwani Bhawan,
Plot No. 47, Institutional Area,
Janakpuri, New Delhi-110 058.

Background

Status of the SIRO : A Society, registered under the Societies registration Act, XXI of 1860, No. S/8859 of 1977.

Year of establishment : November, 1977

Major objectives

- (i) To undertake, carry on or help in the research and other scientific investigations into the growth and development of different variety of various export oriented horticultural produce.
- (ii) To establish Institutes, laboratories, research centres, model farms, study teams for promoting better quality, higher yield of agricultural produce, better packing, transport and shipping with a view to improve the life of the produce and carry on experiments in that behalf and to provide funds for such work and to educate farmers and disseminate the knowledge and fruits derived by conducting training programmes, seminars etc.
- (iii) To investigate and carry on research for assessing demands of agricultural produce of Indian origin in foreign countries by conducting extensive survey and undertake research and development of agricultural produce with export potential and to motivate farmers to grow such varieties of agricultural produce with the object to further developing agricultural export from India.
- (iv) To prepare, edit, print, publish and circulate books, papers and periodicals bearing upon the growth and development of agricultural produce or other scientific and research activities connected therewith and to establish and maintain collections, libraries statistics, scientific data and other information relating thereto.

Major research areas : Research & Development on Union garlic, grapes and other horticultural crops having export potential.

Income and R & D expenditure

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donations received	39.53	41.32	41.77
Grants received	3.50	00.00	00.00
Other income	112.39	121.30	109.81
<i>Expenditure on R & D</i>			
● Capital	4.67	3.18	53.68
● Recurring	124.21	135.27	166.24

Infrastructural facilities

Land & Building : Area : 127 acre ; value : Rs. 111.90

Equipment facilities : Gross Value : Rs. 23.54 lakhs

List of sophisticated equipment : Laminar flow,
BOD incubator
Spectrophotometer,
Seed dryer,
Seed cleaning/grading machine
High Performance Liquid
Chromatographs
Dehumidifier etc.

R & D Manpower: 78 (Full Time), Qualification-
Doctorates/Post Graduates/Graduate**Library facilities**: Books/Journals/magazines on
Agricultural sciences, Administration &
Accounts are available.**Major achievements claimed:**

- Technologies developed
and ready for upscaling

: [I] Crop Improvement

- (i) Yellow onion hybrid-Superex (H) from Japan, Granex 33, Granex 429, Rivera Hybrids from USA and Tana F1 from Germany are found to be high yielder having good potential for export cultivation in Nasik (MS) Indore (MP) and Angul (Orissa).
- (ii) Garlic variety Yamuna Safed (G-1) and Garlic G-282 have been adjudged good for export cultivation in karnal area of Haryana.
- (iii) Standardization of Package of practices for growing white onion bulbs (Dindori collection & Phule Safed) and seed production by annual method.
- (iv) Identification of Okra variety HRB-55, HRB-9-2, HY-6 as resistant varieties against yellow vein Mosaic virus for cultivation in Karnal (Haryana) & Mydukur (A.P.).

[II] Crop Production

- (i) Application of nitrogen @ 125 kg/ha 50% as basal and 50% in two split doses at 45 & 60 days of planting of Agrifound Rose seedlings higher yield which offer and net return.
- (ii) Application of nitrogen @ 150 kg/ha 50% as basal and 50% as top dressing after 30 days of planting by seedling/sets higher yield and thereby which offer higher net return in Kaqrnal area of Haryana.
- (iii) Application of nitrogen @ 100 kg/ha for maximum recovery of exportable size of fruits of okra.

[III] Crop Protection

- (i) Polythene covering of wets oil for 10 days before seed sowing checks the damping off disease of onion nursery as good as soil

drenching with thiram @ 5 g/m² +2 drenching of same chemical @ 0.2% at 15 and 30 days of seed sowing both at Karnal (Haryana) and Nasik (M.S).

- (ii) 5 sprays of mancozeb @ 0.25% or rovrail @ 0.25% have been found effective and economical for controlling of Purple blotch and Stemphylium blight disease of onion seed crop in Karnal area (Haryana).
- (iii) Application of phorate @ 1.0 ai/ha at 30 days and 2 sprays of Cypermethrin 10 EC @ 0.01% at 60 and 80 days of planting have been found effective for control of onion thrips in Karnal area of Haryana.

[IV] Post-Harvest Technology

- (i) Garlic variety G-323 has been found good storer in Karnal area of Haryana.

● New Techniques/methodologies developed and implemented :

[I] Crop Improvement

- (i) Identification of Garlic variety Yamuna Safed-2 (G-50), G-282 and G-323 for cultivation in northern and central part of India. Garlic variety-Agrifound Parvati (G-313) developed and recommended for cultivation in hilly area of Northern India. Farmers have already started growing these varieties of garlic.
- (ii) Cultivation of multiplier onion by seed method which avoids storage of bulbs and also reduce the cost of production.
- (iii) Possibility of cultivation of hybrid yellow onion for export under short day conditions which has encouraged the farmers to go for commercial production in Eastern and Western India for export purpose in view of better return.

[II] Crop Protection

- (i) Use of Cypermethrin @ 0.01% and Fluvalinate @ 0.04% by farmers for effective control of onion thrips, a insect pest of onion.
- (ii) Use of Mancozeb @ 0.25% and rovrail @ 0.25% by farmers for effective control of purple blotch and Stemphylium blight disease of onion.

- Research Paper/Reports : Research Papers 40 ;
Published Research Reports : 23
- Seminars/Conferences : Attended-27 ; Organised-8
attended/organised

Name and Designation of five Senior Researchers

- Sri U.B. Pandey, Director
- Sri Lallan Singh, Joint Director, H.Q., Nasik (MS)
- Dr. R.P. Gupta, Joint Director, Karnal (Haryana)
- Dr. S.R. Bhonde, Joint Director, Dindigul (T.N)
- Dr. K.P.S. Chauhan, Joint Director, (New Delhi)

NIMBKAR AGRICULTURAL RESEARCH INSTITUTE

Address:

Phaltan-Lonand Road,
Tambmal, P.O. Box. 44,
Phaltan 415 523
Maharashtra.

Background

- Year of establishment : 1968
- Major objectives : To undertake research and development in all problems of and concerning rural and semi-rural life, especially those pertaining to agriculture, forestry and agroforestry, rural energy and animal husbandry.
- Major research areas : Renewable energy sources, agriculture and animal husbandry.
- Initial recognition : 1970

Income and R & D expenditure

	(Rs. in lakhs)		
<i>Income</i>	<i>1992-93</i>	<i>1993-94</i>	<i>1994-95</i>
Donations received	4.15	2.15	2.40
Grants received	8.39	22.64	8.87
Other income	8.55	8.10	12.63
<i>Expenditure on R & D</i>	<i>14.25</i>	<i>14.31</i>	<i>22.87</i>

Infrastructural facilities

Land & Building : (area : 50 ha land and 1500 m² building space)

Equipment facilities : Gross Value : Rs. 18.00 Lakhs.

List of sophisticated equipment:

Gas Chromatograph
Precision electronic balances
UV visible spectrophotometer
Laminar air flow
PH meter
Microscope
Centrifuge
Forced draft oven
Spectronic 20 colorimeter
Infra red moisture meter

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical	Doctorates	2	1
	Post Graduates	4	—
	Graduates	4	1
	Others	10	—
Social Sciences & Others	Graduates	3	—
	Post Graduate	1	—

Library facilities : The library contains about 6000 books and regularly gets 100 periodicals (national as well as international) in the areas of agriculture, energy and animal husbandry.

Major achievements claimed :

- Technologies developed and transferred for upscaling/commercialisation
 - (i) Low density biomass gasification system for process heat in metallurgical and agro-based industry.
- Technologies developed and ready for upscaling :
 - (i) Manufacture of jaggery/syrup from sweet-stalked sorghum.
 - (ii) An improved, pressurised mantle lantern running on kereosene/ethanol.
- New techniques/methodologies developed and implemented :
 - (i) Cervical artificial insemination in sheep carried out with 70% success.
 - (ii) Solar earth-work stills for tree plantations.
- Patents filed : 2
 - (i) Improved "Noorie" lantern
 - (ii) Loose biomass gasifier.
- Research papers/reports published : 15
- Seminars/Conferences attended : 4

Name and Designation of five Senior Researchers

- Dr. N. Nimbkar, President
- Dr. A.K. Rajvanshi, Director
- Mr. B.V. Nimbkar, Director (Animal Husbandry Division)
- Mr. R.M. Jorapur, Assistant Director
- Ms. C. Nimbkar, Animal Geneticist



Programmable Logic Controller (PLC) for 300 KW NARI Gasifier

PADDY PROCESSING RESEARCH CENTRE

Address:

Melavastha Chavadi
Pudukkottai Road
Thanjavur-613 005

Bankground

Status of the SIRO : R & D Institution
Year of establishment : 1972
Major objectives : To carry out research work on different aspects of post harvest technology of paddy--prevention of qualitative and quantitative losses, improvement of existing technology and equipments better utilisation of by products functioning as a nodal point for collection and disseminations of scientific data in this field.

Initial recognition by DSIR : August 1990

Income and R&D expenditure

	(Rs. in Lakhs)		
<i>Income</i>	<i>1992-93</i>	<i>1993-94</i>	<i>1994-95</i>
Donations Received	Nil	Nil	Nil
Grants Received	23.67	30.08	70.00
Other Income	1.59	5.52	5.00
<i>Expenditure on R&D</i>			
• Capital	0.12	2.84	28.00
• Recurring	23.55	27.24	42.00

Infrastructural facilities

	Area	Value
Land	14.78 acres	65.00 lakhs
Building	1500 m ²	90.00 lakhs
Equipment facilities	Gross value	50.00 lakhs

List of sophisticated equipment

Viscograph, Gas chromatograph, UV Spectrophotometer, Spectronic 20, Tintometer, Brook fields viscometer, Pulverisette, Dockage tester, Milling meter, Sheller and polisher, Computer

R&D manpower	Qualification	No.
Scientific & Technical	Doctorates	2
Post graduates		6
Graduates		2

Library facilities

No. of books : 1900
No. of abstracting journals : 3
No. of periodicals : 21

Major achievements claimed

- Technologies developed and transferred for upscaling/ commercialisation : Multipurpose Yard Drying Implement (MYDI)--Used for yard drying of parboiled paddy in rice mills which greatly reduces the milling breakage and labour drudgery
- Technologies developed and ready for upscaling :
 - (i) Soak water effluent treated with black ash and other chemicals and aerated to improve colour, BOD & COD and reuse of water
 - (ii) Low friction huller--The huller was modified for shelling only and to get quality by products like oil rich bran and husk separately
 - (iii) Thermic parboiling--Parboiling has been attained at low gelatinisation temperature which is an energy saving technique
- New Techniques/methodologies developed and implemented : Short soaking and tempering (SST) method--Soaking time is reduced to attain optimum moisture for parboiling. This resulted in reduction in drying time, saving in energy and quality of the rice is improved
- Research papers/Reports published : Research papers - 22 Nos.
Reports - 8 Nos.
- Seminars/Conferences attended/organised : (i) Training cum seminars for rice millers were conducted at Palghat and Kaladi (Kerala), Raipur (MP), Shimoga (Karnataka and Thanjavur (Tamil Nadu)
(ii) No. of seminars attended : 15 Nos.
(iii) No. of lectures delivered : 6 Nos.
- Any other

The organisation has taken up the trial milling at National level for Food Corporation of India during 1993-94 at Madhya Pradesh, Andhra Pradesh and Maharashtra.

A Preliminary survey has been taken up on the probable causes of milling breakage in Basmati rice for export and a report has been prepared by visiting different rice mills in Amritsar, Punjab.

Training course is conducted in Rice Post Harvest Technology for rice millers, operators and students from different Universities all over the Country.

Name and Designation of five Senior Researchers

- Dr. A. Dakshinamurthy, Director
- Dr. P. Pillaiyar, Deputy Manager (Tech.)
- Shri B. S. Vasan, Research Chemist (P)
- Shri P. Kumaresan, Research Engineer
- Shri K. Singaravadivel, Microbiologist

POTASH RESEARCH INSTITUTE

Address:

Sector 19, Dundahera,
Delhi-Gurgaon Road,
Gurgaon - 122 001.

Background

- Yer of establishment : 1977
- Major objectives : To conduct research on the use of potassium and related plant food nutrients in agriculture.
- Major research areas : (i) Soil Analysis of Bench-mark soils for monitoring changes in their potassium supplying characteristics and mineralogy
(ii) nutrient indexing of crop plants grown on bench-mark soils;
(iii) Determination of potassium optimum in plant tissues of major economically important crops under multinutrient deficiencies and Determination of potassium role in crop resistance against insect-pests, diseases and water stress. The Institute also supports research in various universities/research institutes to conduct experiments under different agro-climatic conditions.

Income and R & D expenditure

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donations received	20.84	8.25	6.7
Grants received	5.76	4.70	4.6
Other income	8.55	8.10	12.6
<i>Expenditure on R & D</i>			
● Capital	1.36	1.08	15.0
● Recurring	63.86	71.24	61.7

Infrastructural facilities

Land & Building : (Area : 13.40 Acres; Value : Rs. 164. Lakhs.

Equipment facilities : Gross Value : Rs. 119.48 Lakhs.

List of sophisticated equipment:

X-Ray Diffraction
Atomic Absorption Spectrophotometer
Electro-ultrafiltration Equipment
Auto Analyser
Polarising Microscope
Temperature and Humidity Control Chamber
Leaf Area Meter
Pycnometer
Osmometer
Porometer
Photometer

R & D Manpower		Full Time
Scientific & Technical		13
Others		26

Library facilities:

Books	—	2800;
Reprints	—	3500;
Slides	—	2000;
Journals	—	100

Major achievements claimed :

- Technologies development and : (i) Determination of Potassium transferred for unscaling/ commercialisation supplying capacity of 29 bench-mark soil series of India
- Technologies developed and : (ii) Monitoring of the changes in ready for upscaling potassium supplying capacity of 15 bench-mark soil series over a period of time.
- New Techniques/methdolgies : (iii) Determination of developed and implemented mineralogical composition of soil profiles from the 29 bench-mark soil series of India.
- : (iv) Determination of changes in potassium optima in plant tissues of 10 agriculturally important crops under multi-nutrient deficiencies.
- : (v) Establishing the role of potassium enhancing the nitrogen use efficiency in major food crops.
- : (vi) Determination of potassium concentration in plant tissue for disease and drought tolerance.
- Research papers/Reports : 31 published
- Seminars/Conferences : (i) Organised an International Symposium on 'A Decade of Potassium Research' on 18-20th Nov., 1993 at New Delhi.
- : (ii) Attended Regional Workshop on potassium & Northern Africa Region at Tehran Iran from 18-20 June, 1993.
- : (iii) Attended International Symposium on Potassium at Bangkok, Thialand 20th February, 1995.
- Any other : Institute Publishes its own quarterly
- : Journal of Potassium Research.

Name and Designation of five Senior Researchers

- Dr. J.S. Grewal, Director
- Mr. S.K. Banasal, Soil Scientist
- Dr. Shahid Umar, Plant Physiologist
- Dr. Gautam Debnath, Plant Analyst
- Dr. Sukhdev Singh, Soil Chemist.



Glass House for Nutritional Studies



X-Ray Diffraction Unit & Polarising Microscope for Miner Alogical Studies

THE SOUTH INDIAN SUGARCANE AND SUGAR TECHNOLOGISTS ASSOCIATION

Address:
21, 111rd Main Road,
Gandhi Nagar,
Madras - 600 020.

Background

Status of the SIRO

: Society registered under the Societies Registration Act 1860 with certificate of registration No: 128 of 1968 and governed by the provisions of the Tamilnadu Societies Registration Act.

Major objectives

- : (i) Establish close contact and interact with Sugar Technologists of various Sugar Mills by holding periodical Seminars, workshops & conferences.
- (ii) Presenting technical papers regarding latest innovations & discoveries by our members, debating on them and recommending for adoption of such innovation by the sugar Mills.

Major research areas

- : (i) Sugar cane
- (ii) Sugar Engineering
- (iii) Sugar Processing
- (iv) By Products
- (v) Co-generation

Income and R & D expenditure

<i>Income</i>	<i>1992-93</i>	<i>1993-94</i>	<i>1994-95</i>
Seminar A/c	1.86	2.41	2.09
Donations received	Nil	2.08	0.50
Membership Fees	1.57	0.76	0.31
Income from Investments	1.11	1.05	0.54
Other Income	0.94	1.27	1.04

Expenditure on R & D

• Capital	Nil	4.84	0.19
• Recurring	2.83	2.32	2.79

Infrastructural facilities

Land & Building

Area : 442, 27 Sq. Ft.;
Value : Rs. 4.80 Lakhs

R & D Manpower

Scientific & Technical

Qualification	No.
Ph.D	2
Post Graduates	-
Graduates	4

Library facilities : Available

Major achievements claimed

- Technologies developed and transferred for upscaling/communication
 - (i) The total losses on cane reduced by 0.5%.
 - (ii) Milling has been improved in higher mill extraction and high capacity utilisation.
 - (iii) Continues Pan to reduce manpower in manufacturing Division.
 - (iv) Co. Generation Power Plant now in implimented two of the sug mills & it is being arranged in three more sugar mills.
- New Techniques/Methodologies Developed & Implimented
 - (i) Three Masecuite Boiling System to uniform the quality of cryste
 - (ii) Continuous centrifugal Machine for B&C Masecuite to redu dredgery of operation.
 - (iii) Acching of Millrollers to enhance the milling efficiency.
 - (iv) Fibrizers.
 - (v) Vertical crystallizers.

Due to the new technologies the sugar loses in final are reduced the bearest minimum. The Technical performance of Sugar Mills Tamilnadu stands First in India and Second in the World.
- Research Papers/Reports published

The research & technical papers are being periodically published the Sugar Journal of our Assn.
- Seminars/Conferences organised

The organises periodical Seminars & Workshops on various sub Technical papers/inventions are duly published with sugar jourm which are released during the seminars/workshops.
- Any other

Achievements ever since its inception, associating itself with Govt. of India's committee for drawing up the Standard Specifica for Sugar Mill Machinery & Associating itself with Indian Stand Institution for drawing up the Indian Standard for various sugar Machinery such as cane leveller, cutters, centrifugals, Liners & Associating itself with the formulation of I.S.S. sugar Standard

Name and Designation of five Senior Researchers

- Thiru. A.P. Chinnasamy, Sugar Consultant
- Shri Mydur Anand, Sugar Consultant
- Dr. K.R. Perumal, Sugar Cane Expert
- Shri N.V. Varadarajulu, Managing Director

THE UNITED PLANTERS ASSOCIATION OF SOUTHERN INDIA

Address:

The United Planters' Association of Southern India
Glenview, P.B. No. 11,
Coonoor - 643 101
Nilgiris, Tamil Nadu.

Background

Status of the SIRO	: Association registered under societies registration Act. XXI of 1860. Registration No. S-59.
Year of establishment	: 1962
Major research areas	: Basic and applied research in the fields of agronomy, breeding, plant protection, physiology, chemistry and manufacture of tea.
Initial recognition	: November, 1946

Income and R & D expenditure

	(Rs. in lakhs)		
Income	1992-93	1993-94	1994-95
Contributions received	80.48	78.66	40.82
Grants received	6.00	21.00	18.00
Other income	32.89	42.37	43.67

Expenditure on R&D

• Capital	6.56	2.98	16.97
• Recurring	82.03	94.29	96.37

Infrastrural facilities

Land & Building	: Value : Rs. 72.26 lakhs.
Equipment facilities	: Value : Rs. 33.07 lakhs.

List of sophisticated equipment

- Liquid scintillation counter
- Photosynthesis system (IRGA)
- Leaf area meter
- Spectroradiometer
- SMC water status console
- Photomicroscope
- Stereomicroscope
- WATER high pressure liquid chromatograph
- MILLIPORE water purification system
- Atomic absorption spectrophotometer
- Flame photometer
- UV visible spectrophotometer
- Spectronic-20
- Electrophoresis unit
- TLC and paper chromatography equipments
- Freezing microtome
- Growth chamber for tissue culture

- Insect growth chamber
- Digital flamephotometer
- Phast system with gel scanner; etc.

R & D Manpower

	Qualification	Full time
Scientific & Technical	Doctrated	12
	Post Graduate	12
	Graduate	9

Library facilities : Available

Major achievements claimed

- New techniques/methodologies developed and implemented : 13 (Agrotechnique methodologies)
- Patents filed : 1
- Research papers/reports published : 57
- Seminars/conferences attended organised : 29
- Awards won : 2

Name of Senior Researchers

- Dr. A. Abdul Kareem
- Dr. N. Muraleedharan
- Dr. N. Satyanarayana
- Dr. B. Chandra Mouli
- Dr. D.P. Verma
- Dr. L. Manivel

UTTAR PRADESH KRISHI ANUSANDHAN PARISHAD

Address:
16, A.P. Sen Road,
Lucknow - 226 001.

Background

Status of the SIRO

: U.P. Council of Agriculture Research is an autonomous organisation established in 1989 under Society Act, (1860).

Major objective

- : i) To coordinate the activities of State Agricultural Universities, agricultural colleges and other institution and government departments related to agriculture and rural development.
- ii) To monitor and evaluate research activities of State agricultural Universities and other institution engaged in agricultural research in order to identify priorities of research programmes in the state of ensure balanced and efficient use of available resources.
- iii) To prioritize research programmes for different agroclimatic zones of the State in view to accelerate pace of agricultural development.
- iv) To examine and allocate budget for agricultural education and research to State Agricultural Universities on basis of activities and requirements of each university and to monitor and analyse the utilization of the same.
- v) To establish effective linkages among the agricultural scientists, extension workers and farmers for transfer of technology at grass root level.

Major research areas

: Agriculture (Including Horticulture, Animal Husbandry, Aquaculture, Rural Technology, Agriculture Engineering, Farm and Home Economics and Science).

Initial recognition by the DSIR : 1994

Income and R & D expenditure

	<i>(Rs. in lakhs)</i>		
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations received	Nil	Nil	Nil
Grants received	25.75	127.05	24.25
Other income	0.62	0.82	10.51
<i>Expenditure on R & D</i>			
● Capital	1.47	3.84	1.26
● Recurring	36.55	45.18	45.00

Infrastructural facilities

Land & Building : At present the Council does not have its own land/building. However, the land/building of i) U.P. State Agricultural Universities. ii) Various agricultural colleges of the State. iii) Non government organisation.

List of equipments : Equipments of the State agricultural universities/colleges are being used for research purposes. However, the Council has well maintained computer facilities.

R & D Manpower

	Qualification	No.
Scientific & Technical	Ph.D	8
	Post Graduates	2
	and Graduates	—

Library facilities : The Councils maintaining a small library of more than 1000 books and subscribes more than 10 research journals related to agriculture.

Major achievements claimed

- (i) The Council has reviewed all on-going research projects in the three State Agricultural Universities and revised the priorities of research programmes in the State to ensure balanced and efficient use of available resources.
- (ii) The Council has documented the scope, potential and possibilities of reclamation of Sodic Land in Uttar Pradesh along with the compilation of available appropriate technology for the purpose. On this basis, a detailed strategy paper was prepared with the title "Making Usar Bloom". This paper became a base paper for the World Bank assistance for the State in form of 'Sodic Land Reclamation Project'.
- (iii) The document entitled "Prosperity to Pathar Agriculture" has been prepared by the Council enumerating various technologies and available techniques to be adopted in plateau areas of Bundelkhand. The document has been accepted as a base paper for development of agriculture and allied activities in Bundelkhand in U.P. As a result, mass scale plantation of citrus type plants has been taken up in a State sponsored development project in Jhansi.
- (iv) A concept paper was prepared by the Council for commercialization and diversification of agriculture in Uttar Pradesh. On the basis of this paper a detailed project is being formulated with the assistance of World Bank - Japan grant on the subject.
- (v) A study on "Availability of Groundwater Resources of Uttar Pradesh and its Balanced Use and Related Problems" has been conducted by a high power committee of experts. The recommendations of the committee are being implemented by the State Government.

- (vi) An analytical review of the functioning and status of State Agricultural Farms of the Department of Agriculture was undertaken and recommendations regarding improving the functioning of the farms have been submitted to the government.
- (vii) The Council has identified major pest problem of important crops in the State and have up pilot project to resolve these problems by way of cultural, biological and chemical methods.
- (viii) An applied research Project on "Isolation and Development of Efficient Strains of *Azolla* and Blue Green Algae for Rice" has been completed with the financial assistance of Council of Science and Technology, U.P.
- (ix) An operational Research Project on 'Biological Control of Water Hyacinth' has been completed with the financial support of Council of Science and Technology, U.P. The findings of the project have been found to be highly encouraging and praised by various experts.
- (x) On farm trials on the suitability and productivity level of various hybrid seeds of Bajra, Sunflower, Tomato, Brinjal and Capsicum are being conducted under different agro-climatic conditions of the State. The objective of the trial is to identify appropriate hybrid variety which may be recommended for cultivation.
- (xi) Monitored the functioning of NARP and KVK's with a view to ensure much needed development of regional level agriculture technology and extension of new technology at the grass root level through line departments.
- (xii) Proposals for starting new educational courses, creation of new faculties and opening of new post-graduate colleges by these universities were examined and necessary action taken.
- (xiii) Sponsoring research projects in priority areas of research which have not received attention from other sponsoring agencies.

Name and Designation of Senior Researchers

- Dr. D.M. Maurya, Director General
- Dr. R.N. Pandey, DDG, (Soil, Agronomy, Agril. Engg.)
- Dr. Sunita Tewari, Scientific Officer (Agronomy)
- Dr. Sanjeev Kumar, Scientific Officer (Horticulture)
- Dr. Ashwani Kumar Sharma, Scientific Officer (Agril. Economics)

VMA OILSEEDS RESEARCH AND DEVELOPMENT INSTITUTE

Address:

908, Akashdeep,
26-A, Barakambah Road,
New Delhi - 110 001.

Background

Status of the SIRO/
Year of establishment

: VMA Oilseeds Research and Development Institute (VORDI) is a Registered Public Charitable Trust.) Established at Bombay in 1980 by the Vanaspathi Manufacturers' Association of India (VMA) to institutionalise its research and development activities carried on for increasing oilseed production since 1963.

Initial recognition by DSIR : 1991

Major objectives:

- i) Research in all or any aspect of cultivation of oil-bearing seeds, fruits, plants and materials.
- ii) Extension and development activities to disseminate production technology of oil-bearing seeds, fruits and materials through Field Demonstrations, Field Days, Kisan Melas, Seminars and Workshops.
- iii) Seed multiplication of approved varieties of oilseed crops/plants and distribution for increasing productivity.
- iv) Research in marketing, testing and utilisation of oil-bearing seeds, fruits and materials.
- v) Testing of soil, chemicals, fertilisers, pesticides, implements, seeds and other instruments related to cultivation and use of oil-bearing seeds, fruits and materials.
- vi) Establish Institutions and Research Stations for understanding research, training and development activities relating to cultivation of oil-bearing seeds, fruits, plants and materials.
- vii) Monitor trends in area and production of oilseeds in the country.

Major research areas:

i) *Applied Research*

Because of resource constraint, VORDI focuses attention on edible oilseed crops enjoying a higher national priority. These are: Sunflower, Rapeseed Mustard, Soyabean, Groundnut, Sesamum, Safflower and Castor. The thrust areas are:

Evolve and test DR level Rapeseed Mustard varieties.

Evolve and test high yielding Rapeseed/Mustard varieties for rainfed light soils and irrigated areas.

Evolve and test full season maturity sunflower hybrids for Rabi Summer season and short duration hybrids for the cotton belt of north-western parts of the country.

Evolve short duration sunflower hybrids for the rapeseed mustard belt of Uttar Pradesh and Rajasthan.

Evolve castor hybrids/varieties with high yield and oil content.

Varietal/hybrid evaluation for introduction and spread in non-traditional areas/non-traditional seasons in respect of soyabean.

safflower, sunflower, sesamum and groundnut.

Evolving groundnut varieties having fresh seed dormancy for early kharif season.

Identification and development of new cropping system involving oilseed crops.

ii) Adaptive Research and Development:

Development of oilseed production in non-traditional areas as well as non-traditional seasons is of vital importance, VORDI therefore, concentrates on adaptive research and development activities in these areas for growing oilseeds. The major activities are:

Varietal/Agronomical Adaptive Trials/Field Demonstrations for a twin objective of popularisation of high yielding variety/hybrid and multiplication and distribution of location/situation specific varieties for spreading cultivation of oilseeds in non-traditional areas on 'seed village pattern'.

Dissemination of cost-effective and replicable improved production technology for increasing oilseed production through Field Demonstrations and Field Days/Kisan Melas.

Increasing areas under oilseeds through intensive/multiple cropping and intercropping.

iii) Liaison with ICAR and State Agricultural Universities/Departments of Agriculture:

Income and R & D expenditure:

		(Rs. in lakhs)		
		1992-93	1993-94	1994-95
<i>Income</i>				
Donations and Grants received	:	1.86	0.93	5.93
Other Income (interest on investment)	:	3.68	5.11	5.08
<i>Expenditure on R&D</i>	:	7.29	6.28	12.41

Infrastructural facilities

Land:

- i) Tube-well irrigated 12 acres agricultural land for Agricultural Research Station at Rajkot (Gujarat) on annual lease.
- ii) 5 acres of irrigated agricultural land at Research Station, Hyderabad on lease (since abandoned from 31st March, 1993)
- iii) One-acre each at 4 Field Stations at Barkhandi and Qadin (Meethapur) in Punjab and at Sanghoa and Sikanderpur in Haryana. Abandoned since 31st March, 1994.
- iv) 10 acres of land at Research Station, Kadipur (Karnal) abandoned on 31st March 1994.
- v) 10 acres tube well and canal irrigated land at Village Panihari for Agricultural Research Station, Sirsa (Haryana) established on 1st January, 1994.

Buildings:

Buildings for office, laboratory and stores are available at all the Research Stations/Field Stations including Headquarters. Besides the above, the Institute has arrangements with State Agricultural Universities viz., Punjab Agricultural University, Ludhiana, CCS

Haryana Agricultural University, Hissar; Gujarat Agricultural University, Junagadh; Andhra Pradesh Agricultural University, Hyderabad and Directorate of Oilseeds Research of Indian Council of Agricultural Research (ICAR) for using the research facilities in the respective laboratories and research stations.

List of equipment

Sunflower threshers, groundnut decorticator, Agricart, Bullock drawn implements, spraying and dusting equipments, seed storage bins, etc.

R & D Manpower

Scientific and Technical	Qualification	No.
	Doctorates	2
	Post Graduates	5
	Graduates	4
	Diploma Holders	2

Major achievements claimed:

Non-Traditional Areas:

- i) Pioneering work done for introduction and spread of groundnut in non-traditional areas during the Third Five Year Plan has made Orissa one of the major producers of groundnut both in Kharif and Rabi/summer seasons.
- ii) Safflower cultivation introduced over vast areas in Gujarat and acreage expanded in Madhya Pradesh through Half Field Demonstrations devised by VORDI to demonstrate comparative economics and to popularise improved technology. Similar efforts are proving fruitful in Rajasthan and Uttar Pradesh as well..
- iii) Field Demonstrations organised by VORDI during the Fourth Five Year Plan helped in introduction and spread of Rapeseed Mustard in Andhra Pradesh.

Traditional Areas:

- i) After analysing production constraints, introduced and popularised Hybrid castor cultivation in Gujarat and Andhra Pradesh.
- ii) Arranged thousands of tonnes of seed of improved varieties of groundnut for National Minikit programme in Madhya Pradesh and Andhra Pradesh. But for the lead given by VORDI, several good varieties particularly of groundnut and sunflower would not have seen the light of the day.
- iii) The Institute is recipient of Gold Medal from Indian Merchants Chamber of Commerce in recognition of contribution for increasing groundnut production.

New Crops:

- i) VORDI played a pivotal role during the Fifth Plan to introduce and spread of sunflower cultivation both during Kharif and Rabi seasons in Maharashtra, Karnataka and Andhra Pradesh and later recently in Punjab, Haryana and Uttar Pradesh.
- ii) *Jatropha curcas* (Ratan Jyoti) hitherto growing semi-wild has been successfully introduced in Gujarat and Maharashtra after standardising practices for propagation of planting material and cultivation.

- iii) Soyabean cultivation introduced and popularised in Gujarat, Haryana, Punjab and Uttar Pradesh.
- iv) Evaluated and popularised short duration sunflower hybrids Badshah and PSFH 67 in the cotton belt of Punjab, Haryana, Rajasthan and Rapeseed mustard belt of Uttar Pradesh and Rajasthan.
- v) Groundnut introduced in Punjab and Haryana as zaid crop.
- vi) Rabi sunflower cultivation introduced and popularised in Gujarat.

New Methodology:

- i) Intercropping sunflower in groundnut and soyabean in cotton adopted by cultivators in Gujarat.
- ii) Method of Half Field Demonstrations devised by VORDI to demonstrate comparative crop/variety economics and benefits of improved production technology was adopted all over the country in the Fourth Plan to implement the strategy of National Demonstrations to popularise improved technology.
- iii) Minimum size of demonstration/adaptive trial standardised as one acre for demonstrating the feasibility of raising a good crop.
- iv) Instead of scattering the demonstrations in a number of villages, one or two villages per district are identified as a unit of development to conduct atleast 10 demonstrations per village for better supervision and guidance for pre and post harvest operations. It also helps in seed build up at farmers level for quick spread of improved varieties in the adjoining areas.
- v) Low cost and efficient input technology is advocated through field demonstrations to reduce cost of production leading to high returns.
- vi) Organising of Field Days/Kisan Melas at the time of maturity of the crop is a regular feature to train farmers, highlight the importance of the crop/role of new hybrids/varieties and production technology.

Name and Designation of five Senior Researchers

- Dr. Gian Singh, Director
- Dr. B. S. Bhullar, Dy. Director (R&D)
- Shri N. S. Gurung, Dy Director (R&D) North Zone (Himachal Pradesh and Haryana)
- Shri R. S. Vaghani, Agronomist, Central Zone and Research Station, Rajkot (Gujarat)
- Shri S. S. Jhand, Asst. Director Punjab & Rajasthan

NATURAL & APPLIED SCIENCES

Add
P.O.
Ahm

AHMEDABAD TEXTILE INDUSTRY'S RESEARCH ASSOCIATION

Address:
P.O. Ambawadi Vistar
Ahmedabad-380 015.

Background

ATIRA is a co-operative Research Association set up in close co-operation between Government and Textile Industry.

Income and R & D expenditure:

		(Rs. in lakhs)	
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations received	Nil	12.00	2.70
Grants received	178.69	238.53	328.98
Other income	154.17	536.13	270.61
<i>Expenditure on R & D</i>			
● Capital	40.88	437.16	216.34
● Recurring	273.03	455.76	411.61

Infrastructural facilities:

Land & Building	: Value : Rs. 122.21 lakhs
Equipment facilities	: Gross value : Rs. 833.26 lakhs
Others	: Rs. 92.60 lakhs
List of sophisticated equipment	: The laboratories are well equipped with sophisticated facilities like GLC, HPLC, TLC, paper layer chromatography UV visible & I.R. Spectrophotometer. NMR spectrometer, carbon Hydnoy analysed, differential scannies calorimeter and a host of other equipments.

R & D Manpower :

Qualification	Full Time
Scientific & Technical	120
Social Sciences and Others	123

Library facilities	: It is one of the oldest and the best-stocked libraries in India in the field of Textiles and Allied Subjects. It was established at ATIRA in the year 1950 for serving the ATIRA staff members in R & D activities. It is now a fully Computerized Modern Library. It also serves as the 'Host Library' for NICTAS (National Information Centre for Textiles and Allied Subjects) which is located at ATIRA.
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ATIRA library has also extended its services to the staff members of the Member Mills of ATIRA, staff members of Non-member organisations as well as Students and Research Scholars of Academic Institutions/Research organisations, etc.

Library Collection

- Nearly 37,000 books and Bound Journals
- Regular subscription of 350 current Journals and Magazines

- Rich collection of Patents, Standards, Audio/Videomaterials, Foreign Translations.
- Rich collection of Encyclopedias, Directories, Handbooks, Annual Reports, Research Reports and Conference Proceedings

Subject coverage

- Textiles
- Dyes & Dyestuffs
- Carbohydrate Chemistry
- Drying and Air Washers
- Heat Economy
- Energy Conservation, Renewable energy
- Environmental pollution, Audit
- Water Supply, Audit, Control & Conservation
- Textile Management
- Human Relations in Industry
- Training
- Modernization and Renovation
- Polymers
- Electron Microscopy
- Loom Design
- Computer Management and Applications
- Chemicals Engineering
- Social Studies
- Quality, ISO 9000, Total Quality Management
- Business Reengineering etc.

User Categories

- Policy makers/Administrators
- Managers
- Machinery manufacturers
- Ancillary equipment makers
- Technologist
- Marketers/Traders
- Exporters/Importers
- Researchers
- Academicians/Students
- Designers/Fashion Creators
- Textile Consumers and their organizations
- Entrepreneurs : Decentralized Sector (handlooms, powerlooms, processing houses, garment makers, hosiery units etc.)
- Consultants/Trainers
- Fiber Manufacturers

Information Services

- Document Procurement
- Books and Journals lending service to the Staff of ATIRA and Staff Members of Members Mills of ATIRA
- Reference Service and in-house Reading service
- Referral Service: Directing the users to other Libraries/Information Centres which have the needed information
- Inter Library Loan Service
- Current Contents Service: Photocopies of the Contents pages of the Current Journals
- User Education and User Assistance: Educating the new library user

to utilize the various facilities of the library and assisting the users for their information search

- Computerised literature search from the 'Library Books Database'
- Marketing various ATIRA publications and information products
- Newspaper clippings service

National Information Centre for Textile and Allied Subjects (NICTAS) is with ATIRA since 1988. NICTAS also renders several information services at National and International level. Following are the services :

- (i) Literature search from the World Textile Literature covering the period 1973—1995.
- (ii) Reprographic services (Photo-copying).
- (iii) Translation services.
- (iv) Document procurement services viz. Reprints; Patents, Standards, Translations, etc.
- (v) ON-LINE Information accessing from various International Datacentres, like Knight-Ridder, STN, etc.
- (vi) Publications :
 - a) TEXINCON-Textile Information Condensed, a quartely abstracting periodical.
 - b) State-of-the-Art Reports on various current topics related to textiles.

Major achievements claimed :

- Technologies developed : 60
and transferred for
upscaling/commercialisation
- Technologies developed : 6
and ready for upscaling
- New Techniques/methodologies developed and implemented : 12
- Patents Filed : 120
- Research papers/Reports Published : 509
- Seminars/Conferences attended/organised : 112
- Awards won : 30
- Any other : Other Activities of ATIRA through which valuable service has been rendered are :
 - i) Testing
 - ii) Industries Sponsored Research
 - iii) Participative Consultancy
 - iv) Turn-key Assignments
 - v) Jute Project
 - vi) Overseas' Consultancy

Name and Designation of Senior Researchers

- Shri A.R. Garde, Director
- Shri M. Ratna Prabhu, Sr. Deputy Director & Head Library
Communication
- Shri M.C. Pallwal, Sr. Deputy Director & Head Operations
Studies Division
- Shri P.B. Jhala, Deputy Director & Head Machinery Design
Division
- Shri J.M. Grover, Deputy Director & Head Mechanical
Processing (Spinning) Division.

Address
Darbar
India H
New D

ASIAN ENERGY INSTITUTE

Background

- Status of the SIRO** : Scientific Research Institution
- Year of establishment** : September, 1990
- Major objectives** : The AEI was formed in August 1989, with the aim to promote greater information exchange, facilitate sharing and dissemination of knowledge, to undertake research and training activities, and to analyse global energy developments and their implications.

- Major research areas** : The Asian Energy Institute (AEI) is a network of policy research institutes in Asia, which includes representatives from Bangladesh, China, India, Indonesia, Iran, Japan, Jordan, Korea, Kuwait, Malaysia, Philippines, Sri Lanka, and Thailand.

- Initial recognition by DSIR** : 1992

Income and R & D expenditure

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donations received	Nil	Nil	Nil
Grants received	19.28	32.90	—
Other income	Nil	Nil	Nil
<i>Expenditure on R & D</i>			
● Capital	Nil	Nil	Nil
● Recurring	11.82	4.48	15.74

Infrastructural facilities

R & D Manpower

Secretariat*

Scientific & Technical	125
Social sciences and others	100

*Secretariat : Tata Energy research Institute

- Library facilities** : Each member institute of the network houses its own library facility.

Major achievements claimed

- **Research papers/reports published** : The AEI has carried out two collaborative studies. The first titled Collaborative Study on Strategies to limit CO₂ emissions in Asia and Brazil involved country level studies by member institutes from Bangladesh, China, India, Iran, Japan, Korea and Thailand. The second focused on the policies in participating countries regarding the transfer of Greenhouse Gas benign technologies.

● Any other

Research work published include
Global Warming : Mitigation Strategies
and Perspectives from Asia and Brazil
Global Warming : Collaborative Studies
on Strategies to limit CO₂ Emissions
from Asia and Brazil, and Climate
Change in Asia and Brazil.

: In 1947 Mahatma Gandhi convened
the Asian Relations Conference to
awaken Asia and discover its identity
for a large part of it emerged from
colonial rule. Forty years later, in 1987
the Asian Relations Commemorative
Conference was held in New Delhi.
A major recommendation that emerged
from it was the establishment of
collaborative research identity
energy. Towards this end, the Ministry
of External Affairs, Government of
India and the Tata Energy Research
Institute, made efforts to set up a
networking arrangement which aimed
at bringing together prominent
research institutes from all over Asia.

● Seminars/Conferences
organised

- : (i) Workshop on Energy Environment
Interface in Asia; 1990 at Jaipur,
India
- (ii) Workshop on Developing Countries
Perspectives for Protecting the
Global Commons; 1990, Bellagio,
Italy.
- (iii) Workshop on Strategies to Reduce
CO₂ Emissions in Asia and Brazil;
1991, New Delhi.
- (iv) Workshop to review the
Collaborative of AEI, 1992, Bellagio,
Italy.
- (v) Writing workshop to prepare a
proposal on National Policies on
Energy: Implications of Global
Opportunities from the Climate
Change Convention, 1992,
Bangalore, India.
- (vi) Conference on Possible Areas for
Cooperation in Energy and Related
Fields between Central Asia and
Caucasus and other Asian
Countries, 1995, New Delhi, India.

Name and Designation of Senior Researchers

- Dr. R.K. Pachauri President, Tata Energy Research Institute, India
- Dr. Emil Salim Honorary Chairman, University of Indonesia, Indonesia
- Dr. Ali Shams Ardekani Chairman Emeirtus, Iran Chamber of
Commerce, Industries and Mines, Iran
- Dr. Saswinadi Sasmojo Vice-Presidents, Teknologi Bandung,
Indonesia
- Prof. Charuay Boonyubol Chulalongkorn University, Thailand

ASSOCIATED ELECTRONICS RESEARCH FOUNDATION

Address:
5A 1, 2, 3, Ansari Road,
Darya Ganj, New Delhi.

Background

- : Research & Development Company in the field of Electronics.
- Year of establishment : 1981
- Major objective : Indegenization efforts in the field of Consumer/Professional products.
- Major research areas : Communications, Radar, Digital Signal Processing.
- Initial recognition : 1982

Income and R & D expenditure:

	(Rs. in lakhs)		
Income	1992-93	1993-94	1994-95
Donations received	Nil	Nil	Nil
Grants received	9.67	4.00	2.63
Other income	73.67	74.43	82.93
Expenditure on R & D			
● Capital:	13.18	3.36	17.19
● Recurring:	64.90	61.84	74.72

Infrastructural facilities:

- Land & Building : Area : 16572.6265 sq. mtrs.
Value : Rs. 159.87 lakhs
- Equipment facilities : Gross Value : Rs. 132.14 lakhs
- List of sophisticated equipment :
 - Programmable Environmental Chamber.
 - Dry Heat Chamber.
 - Vibration Platform.
 - Profile Projector.
 - HP 9000/330C Mini Computer.
 - 486/EISA PCs.
 - Logic Analyzers.

R & D Manpower :

	Qualification	Full Time
Scientific & Technical	BE, ITI, Diploma	28
Social Sciences and Others	11	

- Library facilities: : A full fledged Library containing Technical/Text books, International/ National journals, Manuals, Data Books and BIS specifications.

Major achievements claimed :

- Technologies developed and transferred for upscaling/ commercialisation :
 - (i) Remote Controlled Color Television
 - (ii) Remote controlled Black & White Television.
 - (iii) Beam Scanning Equipment.

- Technologies developed and : (i) Digital Audio Prodesing ready for upscaling
- (ii) Analog to Digital Converter using Signal Delta Modulator.
- (iii) Development of Powered Wheel Chair.
- New Techniques/methodologies : EEPROM Programmers developed and implemented
- Awards Won : IMM Binatone Young electronic Engineer award.

Name and Designation of Senior Researchers

- Shri H. M. Bhatnagar, Director
- Dr. Ashok Choudhry, Dy. Director
- Mr. S. S. Verma, Sr. Design Engineer
- Mr. Anurag, Sr. Design Engineer
- Mr. P. C. Dwivedi, Design Engineer

AUROVILLE FOUNDATION (PROJECT MATRIMANDIR)

Address:
Auroville 605 101, Tamil Nadu.

Background

- Major objective : Project of Auroville Foundation
- : Matrimandir Project relates to research into architectural and constructional items arising in the construction of Matrimandir which is a unique project of architecture, construction and consciousness.

Income and R & D expenditure

		(Rs. in lakhs)	
<i>Income</i>	1992-93	1993-94	1994-95
Donations received:	19.83	4.23	80.76
Other income:	132.40	106.38	86.20
<i>Expenditure on R&D</i>			
● Capital:	19.82	66.28	80.76

Infrastructural facilities

Land & Building : Area : 73.4 acres; Value:80 Lakhs
: Value : 5 Lakhs

Equipment facilities : Gross Value: (Rs.'28.04 Lakhs)

List of sophisticated equipment :

- Solar Tracking System
- Set of two lenses of dia 450mm X 25mm centre thickness and dia 250mm X 40mm centre thickness made out of fine annealed BK7 glass.

R & D Manpower

	Full time	Part time
Scientific & Technical	5	6
Social Sciences & Others	5	3

Major achievements claimed :

- New techniques/methodologies : (i) Solar Tracking System
developed and implemented (ii) Thermal backup system for Central AC Plants.
(iii) FRP discs, stainless tube reinforced upto 2.40 mm diameter.
(iv) Integration of ferrocement cladding on RCC space frame.
- Research papers/Reports : (i) Paper presented in Nov, 94
Published to ISHRE Madras Chapter titled "Air Conditioning the Inner Chamber of Matrimandir:
(ii) Paper published titled "Thermal Simulation of Building"—Matrimandir Case Study.

Name and Designation of five Senior Researchers:

- Roger Anger, Chief Architect
- Dr. Chaman Lal Gupta, Coordinator (Thermal Engineering)
- John Harper, Coordinator (Solar Energy Research)
- Walter Wagner, Coordinator (Barden Plant & Orchid Research)
- Piero Cictonesi, Coordinator (Heliostat, AC Research)

AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA

Address:
Off Paud Road, Survey No. 102,
Vetal Hill, Kothrud,
Post Box No. 832, Pune-411 004.

Background

- Status of the SIRO : Co-operative industrial research association of the Automobile Industry registered under the Societies Registration Act, 1860.
- Year of establishment : 1966
- Major objectives : Research of immediate benefit to industry; Testing for Industry; Mandatory/Certification Testing Agency Consultancy/Feasibility Reports/Projects; Dissemination of Information (Automotive Abstracts); Preparation of Draft Standards e.g. Emission, Safety etc.; Forward-looking Research/Technology Demonstrator Projects; Interaction with Academic Institutions; Policy Matters affecting Automotive R&D; Utilisation of spare capacity for non-automotive work.

Initial recognition by DSIR: May 1988

Income and R & D expenditure

		(Rs. in lakhs)		
<i>Income</i>		1992-93	1993-94	1994-95
Donations received	:	-	-	0.05
Grants received	:	596.28	487.83	1121.60
Other income	:			
(i) Own generation of funds	:	164.76	237.98	447.69
(ii) Other income	:	136.51	104.26	175.34
<i>Expenditure on R&D</i>				
• Capital	:	845.51	379.82	366.19
• Recurring	:	374.95	425.67	407.97

Infrastructural facilities

Land & Building : Value: Rs. 792.82 lakhs

Equipment facilities : Gross value : Rs. 2619.70 Lakhs

This list of equipment is too voluminous to be included in this report. The facilities available in various departments of ARAI consists of.

Electronic Systems for engine and vehicular application, Automotive materials Laboratory, Automotive Safety & Homologation Laboratory, Emission evaluation Laboratory, Engine Testing & development facility, etc.

R & D Manpower

Scientific & Technical	194
Supporting Staff	114

Major achievements claimed

- Technologies developed and transferred for upscaling/commercialisation:
 - (i) Development of Engine data acquisition and control system (E-DACS).
 - (ii) Development of Swirl Rig and PAVAN (Programme for Air Vortex Analysis) Software.
 - (iii) PC Based Emission Measurement Control and Analysis System (E-MACS) for Automotive Emission Testing.
 - (iv) Turbocharging of 2.4 litre high speed diesel engine.
 - (v) Performance improvement of 1.56 litre single cylinder aircooled engine for a tractor.
 - (vi) Emission reduction of a 6 cylinder, 6.5 litre, DI diesel engine for HCV application.
 - (vii) Feasibility study of a 3 cylinder DI tractor engine for improved fuel efficiency and emissions.
- Technologies developed and ready for upscaling:
 - (i) Design review of 30 litre V-2 air-cooled engine.
 - (ii) Development of ARAI patented CNG kit.
 - (iii) Manufacture of Expansion Engine for Helium Liquifier.
 - (iv) Fabrication of Expansion Engine.
 - (v) An advanced technology demonstrator project on Development of Electronic Engine Management System using Fuel Injection.
 - (vi) Engine Mapping Work to Optimize the Air Fuel Ratio and Ignition Timing for Emission Reduction.
 - (vii) Development of Electronic Engine Control System.
- New Techniques/methodologies developed and implemented :
 1. Software for charging efficiency, trapping efficiency and hydrocarbon emission for 2-stroke engines.
 2. Development of single cylinder head for Petter type engine.
 3. Service load data acquisition and simulation testing on a cross country vehicle.
 4. Service load data acquisition and analysis on a motor-cycle chassis frame.
 5. Roll-over protection test on a tractor.
 6. Vibration analysis of motorcycle using frequency analysis.
 7. Multi-axial testing on spring bracket of a commercial vehicle.
 8. Comparative evaluation of imported and local crank-shafts.
 9. Indigenisation of front axle beam of an earth moving machinery.
 10. Indigenisation of a suspension member viz. nitrogen gas filled cylinder for an earth moving machinery.

11. Finite element analysis of bearing cage for tractor, bearing cap, engine mounts, engine components of 1500 HP engine, front wheel hub, Engine Components of 1500 HP Engine, Feasibility Study for the 4-wheel Drive on existing Tractor, of crankshaft of a Tractor Engine, Container, Front Axle for a heavy vehicle.
12. Design analysis for a single decker integral structure.
13. Software to find out driveling vibrations.
14. Development of a 3-D Combustion Model.
15. A novel technique to lubricate a two-stroke engine without oil pump has been developed for CNG application.
16. Development of Driver's Aid named "Saarathi".
17. Development of 2-stroke engines for 2/3-wheelers for improvement i nfuel efficiency, exhaust emission and noise.
18. Development of alternative fuel vehicles for - (a) CNG operation in a 3-wheeler (b) Methanol operation in a 3-wheeler.
19. Development of Lotus II, a new concept 2-stroke engine (ARAI patented).
20. Facilities established for testing of seat belt anchorages as per ECE Regulations.
21. Facilities established for evaluation of seats as per ECE-Regulation No. 17, except for dynamic test.
22. Facilities established for measurement of strains on fibre reinforced components and its endurance testing.
23. Evaluation facilities established for insulating rod (Kevlar material).
24. Optimization of Car Body Shell using Finite Element Analysis.
25. Development of propeller shaft.
26. Engine Optimisation for Catalytic Converter.
27. Methanol Conversion Kit for 3-Wheeler.
28. 2-Stroke Engine Development for improved fuel economy and emissions.
29. Design of a 70 cc 4-stroke engine for 2-Wheeler application meeting year 2000 emission norms undertaken.
30. A consultancy work for the design of portal frame for +1000 kN vertical and +250 kN lateral loadings, for Research Designs & Standards Organisation - Ministry of Railways (RDSO), Lucknow.
31. Comprehensive facility of performance and endurance testing of steering gear.
32. Stress Analysis of Scooter Chassis Frame.
33. Stress Analysis of Car Body Structure.
34. Low Frequency Noise project.
35. Performance evaluation of Electronic Carburettor.

- Patents Field : 8

- **Seminars/Conferences organised :**

- (1) A short course on "Mathematical Modeling of IC Engine Processes" was held in February 1993. Over twenty registrants from various Industries and educational institutions participated in the week-long course which concentrated on the applications of modeling in real-life design and development problems. Due to the overwhelming response to the course, participants had to be restricted.

- (2) A Symposium on Indian Automotive Technology (SIAT-94) was held from 7-10 December, 1994. The objective of this Symposium was to bring on a common platform experts working in the field of Automotive Engineering both in India and abroad for exchange of views, knowledge and expertise so that the ultimate goal of having safer, cleaner and effective vehicles is achieved.

The SIAT-94 was very well attended. There were 280 delegates with more than 30 foreign participants present in the Symposium. 49 papers were presented, out of which 18 papers came from foreign authors in 13 technical sessions. The Symposium covered various theme subjects including Power Plants, Vehicle Systems and Components, Automotive Emissions, quality Control, Safety & Homologation, Testing and Evaluation Techniques, Computer Simulation and Materials.

Name and Designation of Senior Researchers :

- | | |
|-------------------------|------------------|
| ● Dr. P. R. Sajanpawar, | Sr. Dy. Director |
| ● Mr. S. Raju, | Sr. Dy. Director |
| ● Mr. B. Ghosh, | Sr. Dy. Director |
| ● Mr. Z. A. Mujawar, | Sr. Dy. Director |
| ● Mr. P. N. Rangan, | Dy. Director |

BAKUL FINECHEM RESEARCH CENTRE

Address:
4th Floor, Sterling Centre,
16/2, Dr. A.B. Road, Worli,
Bombay-400 018.

Background

Status of the SIRO : Association
Year of establishment : 1975
Initial recognition by DSIR : March 1975

Income and R & D expenditure:

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donations received	NIL	NIL	NIL
Grants received	NIL	NIL	NIL
Other income	11.54	7.71	8.09
<i>Expenditure on R & D</i>			
● Capital	1.77	0.73	2.60
● Recurring	6.09	6.86	7.87

Infrastructural facilities:

Land & Building	:	Bombay	Baroda
	Area	Approx. 1000 sft.	Approx. 2000 sft.
	Value	Rs 3.46(lakh)	on rent
Equipment facilities	:	Rs 7.40(lakh)	Rs. 6.59(lakh)

List of sophisticated equipment:

- Rotary Vaccum Evaporator
- Polarimeter
- Cryocan Model BA-II for liquid Nitrogen
- Two Twenty litre laboratory Scale-up glass units and a 500 ltrs Stainless steel pilot plant for reflux/distillation/filteraton.

R & D Manpower:

	Qualification	Full time	Part time
Scientific & Technical	Doctorates	1	1
	Graduates	2	—

Major achievements claimed :

- Technologies developed and transferred for commercialisation
 - (i) *Dimethyl Urea* This is the starting raw material for Theophylline and Synthetic Caffeine manufacturing processes. The technology uses indigenous raw materials and hence the production of the important basic drugs Theophylline, Aminophylline and Caffeine is now totally indigenous.
 - (ii) *Monomethyl Urea* This is the starting raw material for Synthetic Tehobromine and Pentoxy-

phylline. There is a substantial demand of Tehobromine for export. The process is based on indigenous raw materials.

(iii) *Theobromine I.P.*

Establishment of commercial production of Theobromine I.P./ B.P., totally from indigenous raw materials, is considered the greatest achievement of this Research Centre for the period under review.

- Technologies developed and :
ready for upscaling

A commercially viable process of manufacture was developed for production of T.B.H.Q.

(Tertiarybutyl Hydroquinone).

Photographic Colour Developers

Sponsored by Agfa-Gavert Ltd., Bombay (now Allied

Photographics Ltd) bench scale work was completed in 191-92 for

development of manufacturing process for CD - (n-2-(N-ethyl-N-

(4 amino-3-methylphenyl)-amino)-ethyl

methanesulphonamide

sesquisulphate monohydrate and

CD-4-Amino-3-methyl-N-ethyl-N(B-hydroxyethyl)-aniline

sulphate. Research Centre's

assistance was requested for

designing and installation of a pilot plant which has since been set up

at a cost of Rs. 40 lakhs and is now ready for commissioning.

Name and Designation of Senior Researchers:

- Dr. R.N. Majumdar, Director
- Dr. M.G. Patel, Scientist-in-charge, Vadodara Laboratory
- Dr. C.S. Patel, Scientist
- Mr. R.N. Thakore, Scientist.

BIRBAL SAHANI INSTITUTE OF PALAEOBOTANY

Address:
53, University Road,
Lucknow-226 007 (U.P.)

Background

- Status of the SIRO : Institution
- Year of establishment : September, 1946
- Major objectives : (i) To promote original research in fossil botany on an all-India basis.
- (ii) To develop palaeobotany, including palaeopalynology, in all its botanical and geological aspects.
- (iii) Dissemination of knowledge in Palaeobotany.
- (iv) To co-ordinate with other knowledge centres in areas of mutual interest, such as Exploration of Fossil Fuels, Vegetation Dynamics, Climatic Modelling, Conservation of Forests, etc.
- Major research area : Palaeobotany Evolution, Palynology, and Biopetrology of Fossil Fuel reserves. Vegetation dynamics of Quaternary sediments, Archaeobotany & Radiometric dating.
- Initial recognition by DSIR : 1988

Income and R & D expenditure:

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donations received	Nil	Nil	Nil
Grants received	198.434	258.388	322.731
Other income	9.968	10.489	13.618
<i>Expenditure on R & D</i>			
• Capital	29.343	39.005	42.310
• Recurring	151.127	173.085	200.878

Infrastructural facilities

- Land & Building : Area : 3.54 acres
Value : Rs 96 Lakhs
- Equipment facilities : Gross Value : Rs. 308.60 Lakhs
- R & D Manpower : -

	Qualification	Full time
Scientific & Technical	Doctorates/Post Graduates	82
	Technical Graduates/Diploma Holders	49
Library facilities	Library has 5000 Books, 10086 Journals, 34931 Reprints on Subjects-Palaeobotany, Palaeontology, Geology, Botany, Archaeobotany. Library has exchange facility in which 1400 individuals and 56 institutions are sending their literature in response to our literature. Recently they have computerised	

their Library. Library also has Xeroxing Lamination facility.

Major achievements claimed:

- Technology Developed : Consultancy work just initiated in upscaling/Commercialization palynology, palaeobotany, biopetrology, radiometric dating and microscopy.
- Research papers/ Reports Published : Published papers during last three years 166.
- Seminars/Conferences : Conference attended : 31
attended\ Organised : 1
Conference Organised : 1
- Awards Won : Awards : 12
Honours : 13

- Any Others : (i) The important aspect of palynology in deciphering the palaeoclimate and age of sediments has been effectively studied in sequences of Tertiary period. Morphotaxonomic studies of Tertiary flora have also been made in detail from Rajasthan, Gujarat, Kerala, Tamil Nadu and Assam. The palynological studies have suggested the origin of *Ocimum* (Tulsi) inferred from the oldest record (ca 50 m.y.) of pollen of this taxa in Early Eocene sediments of Rajasthan

(ii) The petrological studies of coal/lignite samples from Rajmahal, Talcher, Godavari, Singbani, Panandhro and Kapurdi fields have been carried out to determine the ratio between various reactive and nonreactive constituents. Investigations under blue light excitation have revealed the dominance of fluorescing (hydrogen-rich) constituents which render them suitable for liquefaction. Evidence is apparent for hypoautochthonous to autochthonous nature of coal/lignite genesis.

(iii) The phytoplankton investigations from Meghalaya have shown the presence of terretaceous creataceous marker species for precise demarcation of Cretaceous-Tertiary boundary (KTB).

(vi) Pollen analytical investigation of various profiles, surface samples and glacier dust samples from Garhwal Himalaya have revealed the dominance of arboreals followed by non-arboreals.

(v) The Quaternary palynological studies have shown the history of mangrove vegetation in Mahanadi delta, Orissa (40,000 yrs. BP) have revealed the occurrence of distinct transgressive and regressive facies at that time.

(vi) Several tree ring samples from Uttarakhand (U.P.) and Dharamshala (H.P.) have been dated chronologically. Evidence of earthquake has been established through tree ring chronology.

(vii) The radiometric dating (C^{14}) of marl deposits in Mesa Tal, Gosaiganj and Barabanki India.

that the deposition of marl in Gangetic alluvium probably started around 8,500 yrs. B.P. in response to higher precipitation and sea level rise.

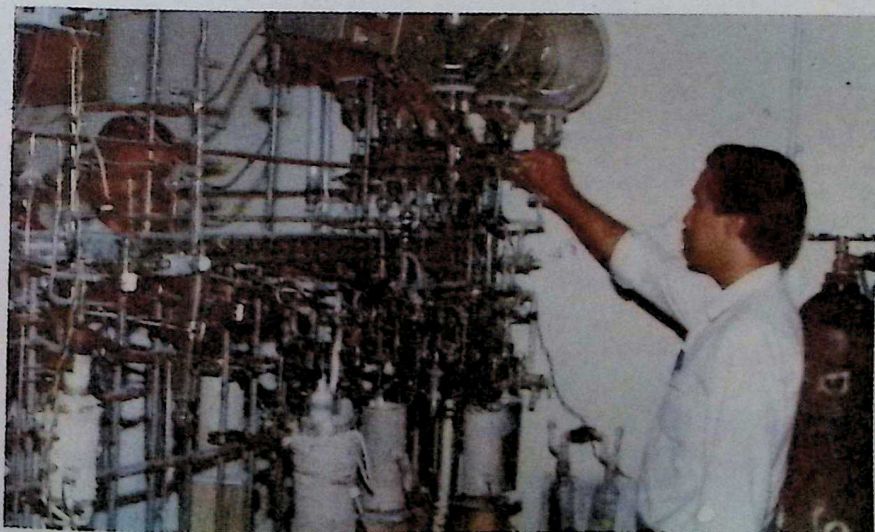
(viii) Petrified wood samples collected from Deccan Intertrappean beds have been dated using Auto Scan System.

Name and Designation of Senior Researchers:

- Dr. G. Rajagopalan, Deputy Director
- Dr. K.P. Jain, Deputy Director
- Dr. H.K. Maheshwari, Deputy Director
- Dr. P.K. Maithy, Deputy Director
- Dr. R.K. Kar, Asstt. Director (SG)



Scientist at Work



C¹⁴ Dating Lab

BIRLA INSTITUTE OF ASTRONOMY AND PLANETARIUM SCIENCES

Address:

Birla Building,
9/1 R.N. Mukherjee Road,
Calcutta-700 001

Background

Status of the SIRO : Society
Year of establishment : 1962
Major objective : To undertake, prosecute, develop, promote, advance, organise, conduct, help and/or carry out on all or any kind of basic or fundamental and/or applied research and scientific work in connection with or relating to different streams of Astronomy, Astrophysics, Celestial Mechanics and Space Science & Technology

Initial recognition : June, 1967

Income and R & D expenditure

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations received	26.00	Nil	135.00
Grants received	Nil	Nil	1.00
Other income	103.06	109.59	99.50
<i>Expenditure on R&D</i>			
• Capital	0.85	0.03	9.80
• Recurring:	19.54	23.26	24.80

Infrastructural facilities

Land : Lease hold land of approximately 1 Acre from the Govt. of West Bengal.
Building : Building consisting of Auditorium, Library, Studies, Demonstration Lectures etc.
Astronomical Gallery, Hall for Lectures, Seminars, Astronomical Course, Library Room and Electronic Research Laboratory etc.
Equipment facilities : The Society owns various Equipment and instruments including Zeiss Universal Planetarium Instrument (Imported) with auxiliaries and Research (Electronic) Equipments.

List of sophisticated equipment

- Universal Planetarium Projector & Accessories
- Celestron-14 Telescope with CCD Camera & Accessories.
- Equipment for Electronics Lab: Oscilloscope and Digital Multipurpose Meters; etc.

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical	Post Graduate & above	5	3
Social Sciences and Others	-do-	6	4

Library facilities : A good library with ever increasing accession of books and latest journals and books in Astronomy, History of Astronomy, Astrophysics, Space Science has been developed during the last 33 years of the institution. Besides our scientists it is also used by the students of the Institute.

List of sophisticated equipment :

- Solar Tracking System
- Set of two lenses of dia 450mm X 25mm centre thickness and dia 250mm X 40mm centre thickness made out of fine annealed BK7 glass.

Major achievements claimed :—

The Automation of the Special Effect Devices, Slide Projectors and Panorama System was taken up and completed.

This Technology developed by us in the field of Planetarium Science is available to all planetaria in the country for application. In the National Conference of Planetarium Directors, Educators and Engineers organized by The Birla Institute of Astronomy & Planetarium Sciences in July 1993 this was announced and taken note of by the participating scientists.

As a sequel to this we received a request from B. M. Birla Planetarium of the Tamilnadu Science & Technology Centres, Madras for designing one Special Effect Device for them. This was done and their staff were also trained on its installation and use.

- Research Papers/Reports Published : 34
- Seminars/Conferences attended/organised : 7

National Conference of Planetarium Directors, Educators and Engineers was organized by The Birla Institute of Astronomy & Planetarium Sciences on July 2 & 3, 1993. A total of 30 participants from the different Planetaria around the country participated.

A National Seminar on Total Solar Eclipse (of October 24, 1995) was organized by The Birla Institute of Astronomy & Planetarium Sciences on July 3 1995. A total of 105 scientists participated in this Seminar. Prominent among them were Prof. Govind Swarup, FRS, Prof. G.K. Ragarajan, Prof. N.C. Rana, Dr. Jagdev Singh, Mr. Ashok Bhatnagar.

Other Important Seminar Lectures headed by distinguished scientists and organised by the Institute are:

National Development through Space Technology: Prof U.R. Rao, Chairman ISRO, May 1993.

Interferometric Studies; Radio & Optical; Prof. Hanbury Brown, FRS, UK, former President IAU (International Astronomical Union); January 1994.

Active Galaxies: Prof. Ajit Kembhavi (IUCAA Pune) and Prof. S.N. Ghosh (Calcutta) and Prof. B. Basu (Calcutta): January 1994

Astronomy of the Upper Atmosphere: Prof. A.P. Mitra, FRS: February, 1994

Solar Control of Earth's Magnetic Field: Prof. G.K. Rangarajan, Indian Institute of Geomagnetism, Bombay: May, 1994.

The Senior Scientific staff of the Institute attended, participated and delivered talks at the National Seminars organized by the Ministry of Science & Technology, Indian Space Research Organization. Science Councils of State Governments, Universities, etc.

- Any other : The Birla Institute of Astronomy & Planetarium Science Instituted and M.P. Birla Memorial Award in the year 1993 to honour the highest talent in the field of astronomy Astrophysics and Space Science. The Award that is to be given every alternate year carries a cash amount of Rupees one lakh and a citation. The first recipient of the award was the well known cosmologist and science popularizer Prof. J.V. Narlikar. The award was presented on July 4, 1993.

During this three year period the publication of the Journal of Birla Planetarium continued and several issues were brought out. These are being circulated amongst the various scientific institutes, planetaria and libraries in the country.

Besides these the Institute continued to play its major role of providing astronomy education to various cross sections of public through the following programmes:

- Free evening Course in Astronomy
- P.G. Diploma Course in Astronomy & Planetarium Science
- Astronomical Presentations to Public using Planetarium Equipment

Popularization through articles in newspapers, journals, magazines and also through T.V. and Radio Programmes.

Names and Designations of five Senior Researchers:

- R. Subramanian, Director
- Piyush Pandey, Assistant Director
- Ramatosh Sarkar, Curator
- Amalendu Bandyopadhyay, Senior Scientist
- M.K. Das Gupta, Course Director, PG Diploma Course.

BIRLA INSTITUTE OF SCIENTIFIC RESEARCH

Address:
78, Syed Amir Ali Avenue,
Calcutta-700 019.

Background

: Established in 1964. Conducting research in the areas of Electrical, Mechanical Electronics, Chemical, Computer, Pharmacy Agriculture, Archaeology, Remote Sensing, Environment, Non-Conventional Energy, Pulp and Paper.

Income and R & D expenditure:

Income	1992-93	(Rs. in lakhs)	
		1993-94	1994-95
Donations received	6.00	101.60	245.50
Grants received	6.06	3.50	3.00
Expenditure on R & D			
● Capital	111.34	—	—
● Recurring	192.89	(Notfurnished)	

Infrastructural facilities:

Land & Building : Value : Rs. 1110.76 lakhs

Equipment facilities : Gross Value : Rs. 270.94 lakhs

R & D Manpower :

	Full Time	Part Time
Scientific & Technical	110	3
Social Sciences and Others	143	—

Library facilities: : Library facilities exist at the Institute Centres

Major achievements claimed :

- Technologies developed and transferred for upscaling/ commercialisation : Design and development of 400m² salinity Gradient Solar Pond for Power Generation.
- Technologies developed and ready for upscaling :
 - (i) Development of Electronic walking Aid for footdrop patients.
 - (ii) Environmental Impact Assessment and Environmental Management plan for the lime stone Mines at Sanu, Jaisalmer Distt. Rajasthan.
 - (iii) Development of Powered Wheel Chair.
 - (iv) A study on Indian Palm leaf manuscripts.
 - (v) Wasteland mapping for Alwar Distt. by Remote sensing technique.

(vi) Corrosion inhibition effect of diethyl dithiocarbamate (DEDC), piperidine dithio carbamate (PDC) and morpholine dithiocarbamate (MDC) on copper in acids investigated.

- New Techniques/methodologies developed and implemented : Synthetic Alkyd Resin Protin food supplements ayurvedic and Patern medicines.
- Patents Filed : patent for Powered Wheel Chair filed.
- Reesarch paper/Reports Published : Several papers published/presented at Seminars.

Name of Senior Researchers

- Dr. H.C. Pande
- Dr. P.K. Ghosh
- Dr. M. Ganorkar
- Shri T.R. Ranganath
- Dr. Praveen Dhyani.

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE (BITS)

Address:
Pilani-333 031
Rajasthan.

Background

Status of the SIRO	: Deemed University
Year of establishment	: 1964
Major objectives	: To impart instruction to undergraduate and postgraduate students and conduct research and to provide guidance to Ph.D. students.

Major research areas

Algorithms and Complexity analysis; Artificial Neural Networks and Fuzzy Systems; Chemical and Life Sciences; Computer Integrated manufacturing Systems & Manufacturing Management; Computer Systems Software and Hardware; Drugs Design and Development; Educational Development; Electrical machines; Power and Control Systems; environmental Pollution and Waste Treatment; Fiber Optics Systems and Devices; Genetic Engineering & Biotechnology; Information Systems; Instrumentation Systems & Applied Electronics; Language and Literature; Management; Finance & Economic Sciences; Matreial Science & Technology; Mathematical and Physical Sciences; Non-conventional Energy Sources & Applications; Parallel & Distributed Processing and networking; Process Control; Remote Sensing and Image Processing; Robotics; Science & Scoeity; Software Engineering; Solid State Devices & Microelectronics; Systems Analysis; Design Modelling & Simulation; Theoretical Computer Science & Engineering; Tribiology.

initial recognition by DSIR :February, 1990.

Income and R & D expenditure

	(Rs. in lakhs)	
	1992-93	1993-94
<i>Income</i>		
Donations received	0.31	Nil
Grants received	69.00	110.18
Other income	549.44	621.03
<i>Expenditure on R & D</i>		
● Capital	Capital Expenditure is met from various grants received	
● Recurring	101.49	117.23

Infrastructural facilities

	Area (Sq. mt.)	Value (in lakhs)
Land:	13,19,770	813
Building:	2,21,037	1487
Equipment & Furniture facilities:		152

List of sophisticated equipment: The centre is well equipped with sophisticated equipments such as GLC, UV, Visible, IR, AA, NMR spectrophotometers, refrigerated ultra centrifuges, HV electrophoresis apparatus, laser spectrograph and a lot of other facilities.

R & D Manpower:

	Qualification	Full time	Part time
Scientific & Technical	Doctrate	98	3
	Others	116	18
Social Sciences and Others	Doctrate	12	—
	Others	14	2

Library facilities :

Books: 1,95,923 Volumes

Journals: 480

● Major achievements claimed:

About 300 students work round the year in industries, research organisations under their Practice School Programme and participate in the ongoing R&D activities of the organisations in addition to the Research work carried out by the Faculty members in the Institute. The end product of these activities are used by the organisation towards their developmental work. One student in the Distance Learning Programme has developed an 'electronic White chair' which has won him NRDC's invention award.

	1992	1993	1994
● Patents filed:	—	—	1
● Research papers Published:	66	51	64
● Seminars/Conferences attended:	74	167	86
● Seminars/Conferences organised:	—	8	3
● Award won:	1	1	3
Ph.D. Degree Awarded:	7	11	13

Name of the five Senior Researchers

- Prof. I.J. Nagrath
- Prof. S.P. Gupta
- Prof. B.M. Mithal
- Prof. P. Parimoo
- Prof. P.S.V.S.K. Raju

BIRLA INSTITUTE OF TECHNOLOGY (SCIENCE AND TECHNOLOGY ENTREPRENEURS' PARK)

Address:
Mesra, Ranchi
Pin-835215

Background

: It was conceived by Birla Institute of Technology, Ranchi to deviate technically qualified people from seeking jobs only by encouraging and helping them to be entrepreneurs. The Birla Institute of Scientific Research (BSIR) at Birla Institute of Technology, Ranchi, took up the challenge and started Small Industries Research and Development Organisation (SIRDO) in the year 1972. The experience of BIT-SIRDO was a positive example and Government of India assisted B.I.T. to set up Science and Technology Entrepreneurs Park (STEP) in March, 1985.

Income and R & D expenditure

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donations received	Nil	Nil	Nil
Grants received	Nil	3.00	3.00
Other income	1.75	5.50	6.00
<i>Expenditure on R&D</i>			
• Capital	1.6	1.00	1.00
• Recurring	1.4	1.40	0.70

Infrastructural facilities

Land & Building : Total land is 200 Acres and building floor area is 20,000 Square feet. It has been provided by BISR and is valued roughly Rs 1 Crore.

Equipment facilities : Gross Value: Rs. 108.70 Lakhs

List of Sophisticated Equipment :

Desk Top Publishing facilities.

Thin Film vacuum Coating Unit
Electron beam gun
Photo Mechanical Laboratory having Lithotex Camera,
Oscilloscope Main frame Dual trace amplifier
Systronix C.R. Oscilloscope
Kirloskar 63, Lathe
FA-3 Universal Milling machine
Surface grinder machine
Elektra EMS 5030 Electro Spark Erosion Machine (Die Sinking Machine)

R & D Manpower

	Qualification	Full time	Part-time
Scientific & Technical	Doctorates	—	4
	Post Graduates	2	2
	Graduates	2	—

Library facilities

: The STEP has a moderately equipped library having about 1000 books including journals.

Major achievements claimed :

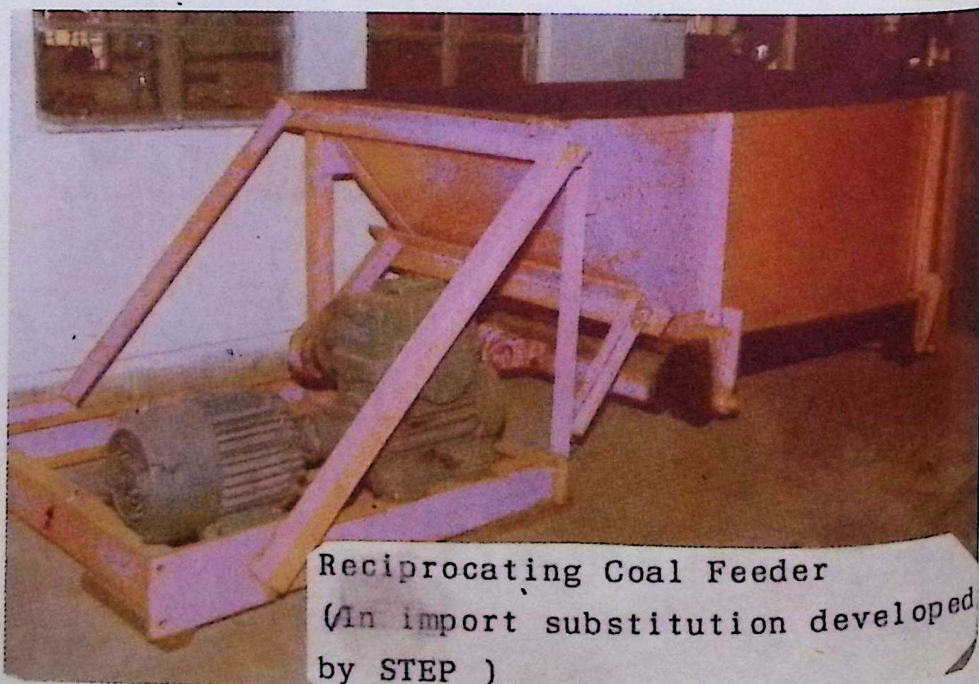
- Technologies developed & transferred for upscaling/ commercialisation :
- Technologies developed and ready for upscaling :
- Research papers/Reports published :
- Seminars/Conferences attended/organised :

Name and Designation of Senior Researchers

- Dr. B. Kanta Rao, Chairman, BIT-STEP
- Prof. R.A. Sharma, Executive Director, BIT-STEP
- Shri T.R. Ranganath, General Manager, BIT-STEP
- Shri Abinash Prasad, Manager, BIT-STEP
- Shri N. Poddar, Scientific Officer, BIT-STEP



Thin Film Vacuum Coating Unit



Reciprocating Coal Feeder (An import substitution developed by STEP)

BIRLA RESEARCH INSTITUTE FOR APPLIED SCIENCES

Address:
Birlagram 456 331
Nagda (M.P.)

Background

: Institution
Year of initials approval : 1965
Major research area : Pulp, Paper, Fibre Organic, Industrial Chemistry, Environmental Chemistry Engg./Designing, Microbiology, Computer facility.

Income and R&D expenditure

	(Rs. in lakhs)		
Income	1992-93	1993-94	1994-95
Donations received	62.00	201.00	67.00
Grants received	Nil	Nil	Nil
Other income	Nil	Nil	Nil
Expenditure on R&D			
● Capital:	4.95	1.47	211.72
● Recurring:	23.39	42.09	46.79

Infrastructural facilities

Land & Building : Area : 20,000 sq. ft.
Equipment facilities : Gross Value : Rs. 208.00 lakhs

List of sophisticated equipment

- Melt Grid Spinning Pilot Plant
- Complete distillation column (S S & Glass)
- Computers

R&D Manpower : 40

	Full time
Scientific & Technical	14
Social Sciences and Others	26

Library facilities : 1800 Books & 30-35 Indian & Foreign Journals, Periodicals & Magazines.

Major achievements claimed

- Major achievements of Birla Research Institute are summarised—

(i) Developed Solvent Spun Cellulosic Fibre

Institute has already developed thermoplastic chips which melts at higher temperature and taken successful trials to produce speciality fibre by Wet/Melt Spinning methods.

(ii) Solvent Recovery in Spinning Process

Recovery of solvent used in Wet/Melt spinning process has been carried out with a well equipped distillation column by our Institute.

(iii) Quality Improvement of Reject Viscose

Quality Improvement and recycling of reject viscose work has been completed by mixing various chemical additives in reject viscose. Plant trials are in progress.

(iv) Improvement in reactivity of Dissolving grade pulp

Hydrothermal & Irradiation treatment of dissolving grade pulp has shown encouraging results. Ongoing plant trials will enable us to reduce chemical consumption in the rayon fibre manufacture process.

(v) *Strength Improvement in Zinc Free Viscose Rayon Fibre*

After achieving success in mill trials of Zinc free visocose rayon fibre, various chemical additives in viscose have shown encouraging results in strength improvement.

- *Patents Filed* India, U.S.A. & Thailand.

- Seminar/Conferences attended/organised : 2

National Seminar on 'Recent Advances in Polymer', Feb. 1995 at DAV, Indore.

'Intensive Course on Polymer Materials', Mar., 1995 at DAV, Indore (M.P.)

Name of Senior Researchers

- Mr. S.K. Roymoulik
- Mr. B.B. Koutu
- Mr. S.C. Salgiay
- Dr. R.K. Sharma
- Dr. K.P. Apte

BOSE INSTITUTE

Address:

93/1, Acharya Prafulla Chandra
Road Calcutta-700 009,
West Bengal.

Background

- Status of the SIRO : Autonomous Research Institute, registered under societies Act XXI of 1960
- Years of establishment : In the year nineteen hundred and seventeen (1917)
- Major objectives : The advancement of knowledge by means of Scientific reresearch
- Major research areas : Physics, Chemistry, Bio-chemistry, Botany (Pure & applied), Microbiology, Bio-physics, Plant Molecular & Celular Biology, Animal Physiology, Environmental Sciences.

Income and R & D expenditure

	(Rs. in lakhs)		
<i>Income</i>	<i>1992-93</i>	<i>1993-94</i>	<i>1994-95</i>
Donations received :	Nil	Nil	Nil
Grants received :	379	424	518
Other income :	Nil	Nil	Nil
Expenditure on R & D			
● Capital :	362	433	501
● Recurring :			

Infrastructural facilities

Land & Building : Area : 47.46 Acres;
Value : Rs. 265.00 Lakhs.

Equipment facilities : Gross Value : Rs. 286.47 Lakhs

List of sophisticated equipment :

DNA Synthesizer
Amino Acid Analyzer
Time-resolved fluorescence spectrometer
Spectropolarimeter
Protin Sequencer
Gas Chromatograph
Electron Microscope
Scanning Electron Microscope
X-ray diffractometer
Atomic absorption spectrometer
Mass spectrometer
EPR spectrometer
HPCL.

R&D Manpower

Qualification	Full time	Part time	Scheme/ Project
Scientific : Good academic record with a doctoral degree 3 yrs. post doct. experience with publication of commendable merit	67	-	8
Scholoars' : Post Guradate and NET/ Gate qualified	31	-	101
Technical Staff : Post Gruadate	86	7	

Library facilities : The Bose Institute Library is a Science reference Library meant for the research staff. At present the total stock in the Library is 29302 vols of Books and bound journals. The Library has the facilities of current content services in Disk alongwith some printed journals. Reprographic facilities are also available in the Library. The Library is participating in the Calibnet Programme which will provide net working facilities to 38 Scientific Libraries in Calcutta.

Major achievements claimed

- Technologies developed and transferred for upscaling/commercialisation:

Environmental impact assessment studies and analytical services were provided to some major industries in West Bengal

- Technologies developed and ready for upscaling

- (i) A sensitive hanging wire velocitimeter has been constructed and calibrated.
- (ii) In vitro culture and fertilization of mammalian eggs and embryo transfer techniques are being standardised in order to produce transgenic animals.
- (iii) An ELISA test for the food toxin, Aflatoxin B1 has been developed.
- (iv) A bioprocess technology has been developed for the treatment of liqued effluent
- (v) A low cost drinking water filter has been developed to provide bacteria free drinking water.
- (vi) In vitro prawn hepatocyte culture has been standardised.
- (vii) Techniques of transformation of C/21 steroid to its C/19 derivative by microbe has been developed

- New Techniques/methodologies developed and implemented:

Genes conferring insect resistance/to tolerance viz. endotoxin genes of *Bacillus thuringiensis* and trypsin inhibitor genes of cowpea/soybean were cloned, reconstructed against specific promoters and finally transferred to target plants.

- Patents Filed : 4

- Research papers : 335 in three years.
Reports Published

- Seminars/conferences attended/organised : Around seven hundred conferences were attended by Institute Scientists during the last 3 years; 5 conferences and 6 workshops were organised.

- Awards won : Seven scientists of the Institute won prestigious awards during the last 3 years.

Name of five Senor Researchers

- Prof. S.K. Sen
- Prof. (Mrs.) Parul Chakraborti
- Prof. R.K. Mondal
- Prof. N.C. Mondal
- Prof. S.C. Roy

CENTRAL BOARD OF IRRIGATION AND POWER

Address:

Malcha Marg,
Chanakyapuri,
New Delhi-110 021

Background

: The Central Board of Irrigation and Power since its establishment in 1921 has done yeoman's service to the Nation in the developmental activities and in exposing our managers, scientists and engineers to the latest technological advancement and knowhow in the world by maintaining liaison with International professional bodies.

Major objectives

- : — Rendering Expertise on Water Resources & Energy and allied fields
- Promoting Research and professional excellence
- Providing linkages to Indian Engineers, Managers and Scientists with their counterparts abroad and International Organisations
- Establishing knowledge data base providing information services
- Technological forecasting

Income and R & D expenditure

		(Rs. in lakhs)		
		1992-93	1993-94	1994-95
<i>Income</i>				
Donations received		Nil	Nil	Nil
Grants received		128.45	197.67	100.00
<i>Expenditure on R & D</i>		128.45	197.67	100.00

Major activities claimed
(i) ADVANCEMENT OF KNOWLEDGE & TECHNOLOGICAL FORECASTING

- Collection and compilation of Data
- Pool the Technical Knowledge and Experience
- Dissemination of Information - Library & Information Services.
- Organizing Workshops, Symposia, Seminars, Conferences, Conventions etc.

(ii) RESEARCH

- Identifying Research Needs
- Sponsoring Research Projects
- Monitoring the R&D Activities
- Assisting in Specific Case Study/Problems
- Documentation

(iii) INSTITUTIONS/COMMITTEES/ORGANISATIONS

- Establishing Contact
- Exchange of Information & Publication
- Functioning as Indian Committees for International Organisations.

(iv) CONSULTANCY

- Maintaining Panel of Experts/Consultants
- Locate Experts for Specific Projects/Works
- Providing information to Member organisation to Member organisations in the country
- Locating expertise in the country for specific needs of countries in Asia/Africa.

(v) PUBLICATIONS

- Research Project Reports
- Technical Literatures
- Basic Research & Applied Research
- Design Construction & Management Publications
- Specifications/Manuals/Guidelines
- Specific Case Studies

C.C. SHROFF RESEARCH INSTITUTE

Address:

903, Ansal Bhavan,
Kasturba Gandhi Marg,
New Delhi 110 001.

Background

C.C. Shroff Research Institute was established in 1977 in memory of late C. C. Shroff who was the founder Chairman of Excel Industries Ltd. The Institute is a non profit making organisation with its main focus in the area of Industrial Research and Development. Since its inception the Institute has also been actively involved in guiding students by Research in Organic Chemistry and in Industrial processes also. The Institute has also a well-equipped Biotechnology laboratory which guides students by Research in M.Sc. and Ph. D. in Plant Tissue Culture for which the Institute is recognised by the University of Bombay.

Income and R & D expenditure

		(Rs. in lakhs)		
<i>Income</i>		1992-93	1993-94	1994-95
Other Income	:	13.40	19.38	22.33
<i>Expenditure on R & D</i>				
• Capital	:	5.64	28.83	2.39
• Recurring	:	13.40	19.38	20.79

Infrastructural facilities

Land & Building : Area : App. 9200 sq. Feet
Equipment facilities : Gross value : Rs. 26.18 Lakhs

The Institute has a well equipped Analytical department having instruments like : GC, HPLC, UV-Visible Spectrophotometer and IR. Also conduct analysis of samples received from outside parties on these instruments. We are also the sole suppliers of standard referenced materials.

List of sophisticated equipment:

UV-Chemito 2500
Cryocool Bath - Spectrum
Rotary Vacuum - Superfit Evaporators
Ultrasonic Bath
Lamainar flow
De-mineralizer
Microwave Over
Centrifug (low temp.)
Gel Electrophoresis,
Seed Germinator
Lobo Microscope,

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical	Doctorates	7	1
	Post Graduates	3	-
	Graduates	4	-
	Diplopma Holders	1	-

Major achievements claimed

- Technologies developed and transferred for upscaling/ commercialisation : Chlorypyrifos, 4-Nitro Indole. Coumaphos, 2, 4-DCPC, 2, 4-DCAP, Benzophenone, 4-Chlorobenzophenone
- Technologies developed and ready for upscaling : Paclobutrazol, Ketoconazole intermediate, Omeprazole intermediate.
- New Techniques/methodologies developed and implemented : New methodology developed for the Synthesis of various aldehydes.
- Research papers/Reports Published : 19 of Plant Tissue Culture Lab. 4 of Organic Chemistry.

Names of Senior Researchers

- Dr. (Smt.) Vidya Joshi
- Dr. (Mrs.) Madhuri Sharon
- Dr. (Ms.) Jyotsana Kapadia

CENTRAL COIR RESEARCH INSTITUTE

Address:

Central COIR Research Institute,
Kalavoor, Alleppey 688 522.

Background

: The Central Coir Research Institute Kalavoor, the research centre of Coir Board was set up in the year 1959.

Major objectives

: Undertaking, assisting or encouraging Scientific, Technological and Economic research in the field of coir in accordance to the Coir Industry Act 1953.

Major research areas

: Conduct studies in extraction of coir fibre and further processing into coir products, product diversification and product developments..

Income and R & D expenditure

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Grants received	49.29	50.00	55.00
<i>Expenditure on R & D</i>			
● Capital	37.81	37.60	38.10
● Recurring	11.48	12.40	16.90

The Central Coir Research Institute is conducting research investigations and developmental activities with the fund allocated through Coir Board from the Ministry of Industry, Department of Small Scale Industries & Agro and Rural Industries, Govt. of India for carrying out schemes exclusively for research investigations.

Infrastructural facilities

Land & Building : The CCRI has a land of about 13 acres with a built up area of 11100 sq. mtrs. at Kalavoor

Equipment facilities : Gross Value : Rs. 150.00 Lakhs.

List of sophisticated equipment :

Laboratory Spray Drier
Pile Wire Loom
Jacquard loom
Driers
Hydroextractors
Xenon testing & Equipment
Lyophilizer
Refrigerated Centrifuge
Laminar Airflow Chamber

R & D Manpower

	Qualification	Full time
Scientific & Technical	Doctorates	1
	Post Graduates	1
	Graduates	5
	Others	26

Library facilities : 500 books and 40 Periodicals and Journals.

Major achievements claimed

- Technologies developed and transferred for upscaling/ commercialisation : 1
- Technologies developed and ready for upscaling : 4
- New Techniques/methodologies developed and implemented : 5
- Patents Filed : 3
- Research papers/Reports published : 8
- Seminars/Conferences attended/organised. : 20

Name and Designation of Senior Researchers

- Dr. U. S. Sarma, Director, RDTE
- Shri V. Radhakrishnan Nair, Joint Director
- Shri R. Gopalkrishnan, Senior Scientific Officer
- Shri T. A. Rajendra Babu, Senior Scientific Officer
- Smt. Das Anitha Rabindranath, Senior Scientific Officer

CENTRAL INSTITUTE OF PLASTICS ENGINEERING AND TECHNOLOGY

Address:

Guindy,
Madras - 600 032.

Background

Central Institute of Plastics Engineering and Technology (CIPET) is an autonomous Institute under the Department of Chemicals and Petrochemicals, Ministry of Chemicals and Fertilizers, Government of India, established in 1968 at Madras. This Institute has the privilege of being associated with United Nations Development Programme for about 25 years. This is the only institute of its kind in India with all facilities like designing, tooling, processing and testing of plastics available under one roof. Due to the emerging need of trained manpower and technical services, CIPET has expanded its service network by extension centres at Ahmedabad, Amritsar, Bhubaneswar, Hyderabad, Imphal, Lucknow, Mysore and Seremban. Centre at Patna and Goa. CIPET has recently received assistance from World Bank for an amount of US \$ 12 million for strengthening the training and R&D facilities.

Major objectives:

- (i) Development of skilled manpower for plastic industries;
- (ii) Upgradation of technical knowledge through advanced training programme;
- (iii) Quality Control and standardisation of plastic materials and products;
- (iv) Technical Consultancy and Advisory Services;
- (v) Design and development of moulds, dies and plastic products;
- (vi) Application development in the area of plastics;
- (vii) Import substitution for developing awareness for conservation of energy and scarce natural resource through the use of plastics;

Major research areas:

Polymer Blends & Alloys, Development of Formulation, Compounding, Effect of additives on mechanical & visco-elastic properties, Development of processing methods, Equipment development, Computational study of polymer flow, Studies on polymer composites, Application development, Mould development and Extrusion die studies.

Initial recognition by DSIR : 1995

Income and R&D expenditure

	(Rs. in Lakhs)	
	1992-93	1993-94
Income		
Donations received	Nil	Nil
Grants received	300.00	300.00
Other income	153.40	206.62
Expenditure on R&D		
• Capital	42.00	47.00
• Recurring	64.00	66.00

Infrastructural facilities

Land & Building : Area : 66 acres Value : Rs. 803 Lakhs
 Equipment facilities : Gross value : Rs. 1419 lakhs

List of sophisticated equipments:

Thermal Analyser, High performance liquid chromatograph, Fourier Transform Infra-red Spectrometer (FT-IR), Gas chromatograph with built-in FT-IR, Haake Rheocord, Universal testing machine, Rhedynamic spectrometer, Weather-o-meter, Microprocessor controlled injection moulding machine etc.

R&D Manpower

	Qualification	Full Time
Scientific & Technical	Doctorates	80
	Post Graduates	

Library facilities:

The Institute has a Library with an extensive collection of reference books, national and international standards, periodicals and journals from all over the world. It has a total No. of 10,000 text books. It subscribes to more than 75 journals.

Major achievements claimed:

- Research Paper/Reports Published : 37
- Seminar/Conferences attended/organised:
 - (i) CIPET organised 10 national seminars in the area of plastics technology during last three years. The major one are; "Emerging Trends in Plastic Recycling Technologies and Waste Management", "Emerging Technologies of Plastics" and "Plastic Industry - The Perspectives"
 - (ii) CIPET celebrated its Silver Jubilee during March 1993 and organised an exhibition in the campus at Madras with the support of All India Plastics Manufacturers Association.
 - (iii) CIPET has participated in more than 20 exhibitions at national and international level to provide informations on the latest developments in plastics engineering and technology.
 - (iv) CIPET organised 25 awareness programmes for the benefit of plastic industries.
- Technical Services:

In the last three years, CIPET has assisted 18,000 plastic and related industries in the area of testing, characterisation, quality control, solving trouble shooting problems, preparation of project reports and other consultancy & advisory services. The major ones are:

 - (i) Technical evaluation and consultancy to improve the quality of the products and output of the 16 PE extrusion and bag making units in Tamil Nadu.
 - (ii) Quality assurance certification at the PVC pipe manufacturer work for the pipes procured by the Govt. Departments.
 - (iii) Project evaluation report to manufacture mineral water bottles for National Mineral Water Co., Oman.
 - (iv) Evaluation of polymer compounds, blends and alloys for various end products.
 - (v) Solving of machine and production problems associated with disposable medi-aids.

- **Manpower Training:**

CIPET is conducting six long-term courses in the area of plastic processing, testing, mould design and fabrication. The number of students undergoing training per year has been increased by one and half time in the last three years. In addition to long-term courses, CIPET is also conducting short term course, tailor-made courses, modular courses and specialised courses in the above areas for upgrading the knowledge of personnel in the plastic industries. In the last three years, 300 such courses were conducted.

Name and Designation of Senior Researchers

- Dr. J.S. Anand, Director
- Dr. K. Ramamurthy, Dy. Director
- Dr. K.S. Jagadeesh, Dy. Director
- Mr. S.K. Sharma, Dy. Director
- Dr. Vijaikumar, Sr. Manager

CENTRAL MANUFACTURING TECHNOLOGY INSTITUTE

Address
 Tumkur Road,
 P. O. : Yeswanthpur
 Bangalore - 560 022

Background

: Central Manufacturing Technology Institute', formerly known as "Central Machine Tool Institute" CMTI in short, was established in 1963, as an R & D Organisation for machine Tools and Production Engineering by the Government of India in technical collaboration with VUOSO, Czechoslovakia. CMTI is registered as a Society and membership is open to all engineering industries and professionals in the field. Since 1963, the Institute has been steadily updating its facilities and expertise in thrust areas of Manufacturing Technology in keeping with changing trends and meeting the increasing demand of Indian Industries in Leading Edge Technologies. CIM, Robotics, Precision Engineering & Laser Machining are the current thrust areas.

Income and R & D Expenditure

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95 (Provisional)
Donations received :	Nil	Nil	Nil
Grants received :	317	277	268
Internal resources	216	303	299
Other income	25	47	37
<i>Expenditure on R & D</i>			
● Capital :	166	130	123
● Recurring :	408	499	492

Infrastructural facilities

Land Building Services	:	451
Equipment facilities (Gross Value)	:	2051

R&D Manpower

Qualification	Full time
Scientific & Technical	289

Library facilities : A specialised library having all types-of documents and computerised information facilities is available.

Major achievements claimed :

- Products, Technologies and Services designed/developed Products

Products

- CNC 5 axis Broach Sharpening Machine
- CNC Vertical Axis Special Purpose Machine for OD Turning, ID Boring and Gap Milling for piston rings.
- Special Purpose Multispindle Engraving Machine
- Universal Cylindrical Grinders

Internal Grinding Machine
 Keystone Piston Ring Grinding Machine
 Radial Drilling Machine
 Precision Ball Screws & Slides
 Mould Parts for TV Screen
 Slant Bed Trainer Lathe
 Heavy Duty Bevel Gear Cutting Machine for Spiral/hypoid Gears
 Vertical Hydraulic Honing Machine
 Globoidal Cam Rotary Indexing Unit
 Positioning System for Microbeam Quadrapole Magnets
 Development of PC Based CNC System

Services

Precision Machining
 Finite Element Analysis
 Software Development
 Machine Tool Inspection, Testing and Calibration
 Condition Monitoring
 Computerised Information System

● Various Projects taken up & Completed or in progress:

(i) Machine Tools

Design of a five axis CNC broach sharpening machine for flat and circular broaches. The machine is equipped with 3-D electro probing system to accurately measure and locate position of teeth.

Design of a "Special purpose, CNC, Vertical Axis, OD turning boring and Gap milling machine" for piston rings is in progress. The design minimizes the number of machines, setup-time and number of operators for piston ring manufacture.

Design and development of a Special Purpose Multispindle In-Roller Engraving Machine for a sponsor was completed.

Design of a Universal Cylindrical Grinder GCU 260 x 1000, a precision electro-hydraulically controlled machine was completed.

Design and development of other equipment like Spectral Interferometer and Indentor probe for portable hardness testing is in progress.

(ii) Standards

The Institute continues to support BIS (Bureau of Indian Standards), activities in the area of machine tools, fluid power metrology, cutting tools, gears, drafting practice etc. The Institute has participated in various meetings. Consultancy services were provided in the areas related to machine tools, materials, machine tools, drafting practice, calibration etc.

(iii) Manufacturing Engineering

Machining Technology development tasks were carried out in respect of ball screws and nuts, mould parts, globoidal cams for use in razor blade manufacturing machine, split shaft cooling engine etc. In addition, consultancy services were provided

in the areas of selection and utilisation of CNC machines, evaluation of FMS etc.

(iv) Testing and Evaluation

The activities during the period included purchase inspection and prototype testing of machine tools and hydraulic equipments, noise and vibration analysis, condition monitoring, chemical analysis of materials and National Survey on the performance of indigenous and imported CNC machine tools.

(v) Precision Engineering

Precision measurement and inspection, laser calibration services and implementation of the project "Precision Engineering Facility" were the main activities.

The metrology laboratory was assessed and accredited by the "National Accreditation Board for Laboratories (NABL)" for compliance to NABL - criteria based on ISO/IEC Guide 25 and EN 45000 in the area of 'Calibration'.

Calibrations were carried out for measuring equipments, CNC machine tools, instruments, gauges, masters, levels, scales etc. Investigatory measurements were carried out for digitisation of profiles, establishment of complete inspection strategy for electrode hobs, radical cams etc.

A number of precision components and inspection aids were manufactured for various customers.

(vi) Robotics

Under the Robotics Facility a "Robotic deburring cell", a nozzle Loading Simulator, a Teach Box for MIG-MAG arc welding cell and welding technology for robotic MIG welding were developed.

"Robotic MIG-MAG arc welding cell" is a joint project handled by CMTI, Indian Institute of Science and Bharath Earth Movers Ltd. under a National Programme of robotics sponsored by Department of Science and Technology.

(vii) Numerical Control

Development and retrofitting of CNC systems, modelling, programming and machining of critical components were the main activities.

Development of a CNC trainer lathe with a PC-CNC, retrofitting of a CNC system to a Wotan High Precision horizontal Machining Centre were some of the tasks taken-up and completed.

(viii) Camwi

Work undertaken in this area included design, analysis, reverse engineering tasks, implementation of DNC and Machine Monitoring Systems and supply of BTR interface system and papertape Reader/Punch system.

(ix) CIM Project

A computer Integrated Manufacturing (CIM) project is being implemented with UNDP assistance with an outlay of US \$ 2.352 million from UNDP and Rs. 1.035 crores from the Government of India.

(x) Computer Software

Work carried out in the area of computer software includes :
Development of IMPAS software covering process planning time

estimation and tool planning; development of a Computer Aided Process Planning Interactive for Personal Computer (CAPRIPC), development and installation of FMS Scheduler and simulation software and development of error compensation for laser.

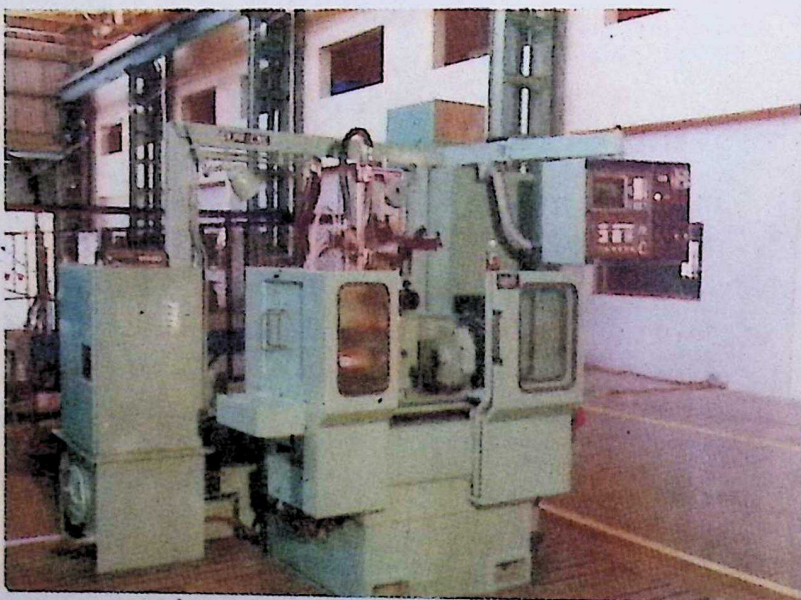
(xi) Machining Services

The facilities of the Institute in the high technology area of CNC machining, non-traditional machining and precision machining were extended to industries on specific request for machining critical components.

- Research papers/Reports published : 27 Paper/Reports published
- Seminars/Conferences attended/organised : 115 people attended seminars, conferences and workshops. Organised 5 seminars, conferences & 86 training programmes

Name and Designation of Senior Researchers

- S. Vasantha Kumar, Director
- S.Z. Abdin, Joint Director
- S. Venkata Ramiah, Joint Director
- M.V. Suryaprakash, Joint Director
- G. Sudheendra, Joint Director



CNC Vertical axis, OD turning ID boring and Gap Milling Machine

CENTRAL POWER RESEARCH INSTITUTE

Background

Address:
PB No. 9401, New Bel Road,
RMV II Stage Bangalore-560 094.

The Central Power Research Institute, popularly known as CPRI, is an autonomous society under the Government of India, Ministry of Power. The Institute has been established to serve as a national centre for applied research in electrical power engineering and to function as an independent and impartial authority for testing and certification of power equipment manufactured in the country, as well as to assist the electrical industry for product development and quality assurance. The Institute also undertakes research programmes on subjects of interest in the field of power systems and offers consultancy on problems referred to by utilities and industries.

Several research projects of great importance to the electrical industry (including a large number of sponsored schemes) connected with Generation, Transmission, Distribution and Utilisation of electrical energy have successfully been completed. The Institute has a large number of technical papers presented at various national/international conferences, seminars etc. Over the years CPRI has built up sophisticated infrastructure and has set up many laboratories.

Income and R & D expenditure

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
Income			
Grants Received (R&D only)	69.00	69.00	48.49
Expenditure on R&D			
• Capital:	15.22	12.93	22.68
• Recurring:	51.43	28.11	32.60

Infrastructural facilities

Land & Building : Gross Value: Rs. 21,017 Lakhs.

Equipment facilities :

R & D Manpower

	Qualification	Full time
Scientific & Technical	Graduate	239
	Post graduate	40
	Doctorate	15
Social Sciences and Others	Technical	226
	Adm/Accts	348

Library facilities	: Books	: 10,373
	Journals	: 3,204
	Tech Reports	: 3,362
	Standard & Specs	: 4,445
	On-line Search. Literature	: 24

Major achievements claimed :● **R&D Projects Completed**

CPRI has executed over 150 sponsored Research Projects and has offered consultancy services to Major Public/Private Sector Undertakings, Government Bodies and Power Utilities in the last decade. A few of the sponsored projects are listed below:—

- i) Study of grounding grids under power frequency impulse and DC Currents.
- ii) Feasibility study for enhancing the power transfer capability of NHVDC experimental line.
- iii) Vibration studies on transmission lines.
- iv) Development and evaluation of low smoke power cables.
- v) Ageing studies of insulators under DC Voltages.

● **Technologies Upscales:**

- i) Synthesis of capacitor fluid from Rape Seed Oil.
- ii) Pilot Plant to demonstrate On-line Reclamation of used transformer oil.

● **Patents Filed : 9**● **New Processes & Technologies Developed:**

Few important ones are:—

- Hand held battery operated capacitance detector;
- Semi-conducting compound for Power Cables;
- Epoxy-Navolac Resin;
- Capacitor fluid from Rape Seed Oil;
- Low -cost Gas Chromatograph;
- Self-heal align break down detector for polypropylene capacitor;
- Microprocessor based Single Phase Energy Meter;
- Microprocessor based Trivector meter;
- Priyagni Store-Smokeless Chulha;
- Pistonless steam operated Pump;
- Software packages for Power System/Utilities;
- Microprocessor based Cable Fault Locator;
- Microprocessor based Power Line Harmonic Analyser;
- Fly-ash based Bricks/Tiles;
- Thermal shock resistant Zirconia Ceramics;

● **Revenue**

The revenue earned by the institute has been increasing steadily. The revenue earned during 1993-94 touched a record figure of Rs. 8.52 Crores.

● **Awards**

The Engineering and Scientific Officers of the Institute have received many awards/medals/citations for their research achievements. They include NRDC National Award for best invention and CBIP Diamond Jubilee Awards, Best Young Scientist Awards etc. The Institute has also received the CBIP Diamond Jubilee Award for the "Best Engineering Research Station".

● **Technology Transfer**

The products/processes (technologies) developed at the Institute have been commercialised to more than 40 organisations across the country.

● **Quality Assurance**

Accreditation of CPRI facilities at Bangalore under NABL scheme as per EN 45000 standards. CPRI has been conferred Observer Status in the prestigious Short Circuit Testing Liaison Groupe in Europe.

● **MOU's for R&D Co-operation**

CPRI has established long term R&D Co-operation agreements for information exchange with reputed International Bodies like

CESI-Italy, EDF-France, IREQ-Canada and EPRI-U.S.A.

- Participation in National & International Committees
CPRI is represented in many national and international committees like BIS, CBI&P, CIGRE etc. and lend its services for formation of standards.
- Technologies available for transfer
 - i) Hand held battery operated Capacitance Detector;
 - ii) Spherical electrode field strength meter;
 - iii) Semi-conducting compound for power cables;
 - iv) Epoxy-Novalac Resin;
 - v) Capacitor fluid from Rape Seed Oil;
 - vi) Reclamation of used & discarded Transformer Oil (subject to sponsorship from S.E.B.'s);
 - vii) Low-cost Gas Chromatograph;
 - viii) Self-healing breakdown detector for polypropylene capacitors;
 - ix) Inclined plane tracking & erosion apparatus;
 - x) Conducting polymeric rechargeable batteries;
 - xi) Microprocessor based Single Phase Energy Meter;
 - xii) Microprocessor based Card Operated Single Phase Energy Meter;
 - xiii) Microprocessor based Trivectormeter;
 - xiv) Automatic power factor controller;
 - xv) Negative sequence voltmeter;
 - xvi) Priyagni Stove-smokeless Chulha;
 - xvii) Updraft multi-fuel biomass gassifier;
 - xviii) Pistonless steam operated pump;
 - xix) Heat-pump;
 - xx) Software packages for Power System/Utilities.

Name and designation of five Senior Researchers

- Shri V. Jayachandran, Additional Director
- Dr. P. R. Krishnamoorthy, Additional Director
- Shri V.B. Ram Mohan, Additional Director
- Shri S. Parameswaran, Additional Director
- Shri S. Sridharan, Additional Director

CENTRE FOR DEVELOPMENT OF IMAGING TECHNOLOGY (C-DIT)

Address:

Chitrangali Studio Complex,
Thiruvallom, Trivandrum-695 027
Kerala.

Background

- Status of the SIRO : Registered Society (R&D)
- Year of establishment : December, 1988
- Major objectives :
- i) Research and Development in the area of Film, Video and Imaging technology.
 - ii) Production of Video software for Development Communication.
 - iii) Running of courses in film and Video Technology, Video Production etc.
 - iv) Imparting of training in related areas.
- Major research areas :
- i) Technology Adaptation and absorption of 3 film equipments.
 - ii) Development of Video products like frame grabber Video routing witcher, video production switcher, Digital effects processor etc.
 - iii) Computer graphics and Video Animation.

Initial Recognition by DSIR : March 1989

Income and R & D expenditure

	1992-93	1993-94	(Rs. in lakhs) 1994-95
<i>Income</i>			
Donations Received	NIL	NIL	NIL
Grants received:	59.41	38.51	64.73
Other Income			
technical consultancy income	3.06	8.29	5.00
<i>Expenditure on R & D</i>			
• Capital	43.39	3.16	12.61
• Recurring	51.64	22.23	30.20

Infrastructural facilities

List of sophisticated equipment :

- Video Test & Measurement System
- Software Development Tools/Kit
- High resolution monitors
- Audio test system
- BETACAM-SP video production and post production equipment
- S-VHS video equipment
- MATROX 3-D graphics hardware and software

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical Engineering	Doctors	1	
	Graduate	7	
Physics	Doctors	1	1
Engineering	Diploma	3	
Film/video production	Post Graduate	1	
	Diploma	5	2
Social Sciences	Doctors	1	4
	Post Graduate	2	

Library Facilities : Library with over 5000 books on Electronics, Video, Computer, Image processing, Fil/Video theory and production, Development studies etc. exists.

Major achievements claimed

- **Technologies developed and ready for upscaling** : Technology for 3 equipments viz Densitometer, Video routing switcher, Video Distribution Amplifier were developed.
- **New Technologies/ methodologies developed and implemented** : Computerised Photo Identity card making method developed and implemented.
- **Seminars/Conferences attended/organised** :
 - 1) Attended State Science Congresses
 - 2) Organised Workshop on Development Communication
 - 3) Organised International Video Festival on Science, Society & Development (September 8-14, 1995)
- **Awards won** : Video programme produced by C-DIT has won first price at Tokyo Environmental Film Festival, 1992.

Name and Designation of Senior Researchers

- Dr. Mahabaleswara R. Bhatt Dy. Director (Software)
- A. Sreekumar Dy. Director (Electronics)
- Aravind Scientific Officer (Electronics)
- Dr. Nata Duvvury Joint Director
- Dr. P.T. Ajith Kumar Scientific Officer (Natural Sciences)
- K.K. Shajahan Research Associate

and general purpose camera
Electronic Micro balance and
Thermal System consisting of
Central Processor and hot stage
and thermal microscopy

Leitz Universal Polarised Light
Microscope for transmitted Light
Applications with micro photography
system.

R & D Manpower

	Qualification	Full time
Scientific & Technical	Doctorate	5

Library Facilities

: The Centre is gradually setting up a library consisting of core books and journals directly relevant to its activities, but the excellent library facilities available in the neighbouring institutes viz IISc and RRI will be utilised.

Major achievements claimed

- Research Papers/Reports published : 20 (1992-95)
- Any other : Prof. S. Chandrasekhar FRS has won the following awards during the past 3 years :
 - (i) Meghnad Saha Medal, INSA, 1992
 - (ii) R.D. Birla Prize, Indian Physics Association, 1992
 - (iii) C.V. Raman Award, Indian Science Congress, 1993
 - (iv) Royal Medal of the Royal Society of London, 1994

Name and Designation of five Senior Researchers

- Prof. S. Chandrasekhar, Director,
- Dr. S. Krishna Prasad, Scientist,
- Dr. Sandeep Kumar, Scientist,
- Dr. Geeta G. Nair,, Scientist,
- Dr. Veena Prasad, Research Associate,

CENTRE FOR LIQUID CRYSTAL RESEARCH

Address:
P.B.N. 1329, Jalahalli,
Bangalore - 560 013.

Background

- Status of the SIRO** : The Centre for Liquid Crystal Research was established and registered as a Society under the Karnataka Societies Registration Act, 1960, on 1st April 1991.
- Major research areas** : Study of new liquid crystal materials and development of display devices for use in calculators, computer terminals etc.
- Major objectives** : The primary aim of the Centre for Liquid Crystal Research (CLCR) is to undertake fundamental studies on new liquid crystal materials and to investigate their technological relevance. The major applications of Liquid Crystals are in "Liquid Crystal Displays" (LCDs) for pocket calculators and electronic instruments, and in large area displays for airports, bus stations, banks etc. The work done at CLCR is expected to pave the way for the indigenous design and fabrication of sophisticated displays such as flat panel television screens and computer terminals. The Centre is collaborating closely with Bharat Electronics Limited in setting up facilities for large scale manufacture of these displays to fulfill the country's needs for electronic applications.
- With a view to developing this Centre as a Centre of Excellence having a focus on basic science as well as an interest in potential technological applications Government of India has taken over the Centre as a Scientific Society of the Department of Electronics with a budgetary support of Rs. 2.85 crores during the Eighth plan period.

Initial recognition by DSIR : 1993

Income and R & D expenditure

		(Rs. in lakhs)		
<i>Income</i>		1992-93	1993-94	1994-95
Donations Received	:	—	—	0.05
Grants Received	:	4.00	56.90	39.35
Other income	:	0.26	1.21	1.83

Expenditure on R & D

• Capital	:	1.22	0.15	47.42
• Recurring	:	2.53	2.25	6.94

Infrastructural facilities

Land & Building : Bharat Electronics Limited, Bangalore has provided the Centre for Liquid Crystal Research, on lease, a substantial prece of land, as well as a building of plinth area of about 10,000 sq. ft. costing about Rs. 40 lakhs.

Equipment Facilities: gross value : Rs. 36 Lakhs

List of sophisticated equipment: X-ray Generator with 2 fine focus x-ray tubes with water colling system

and general purpose camera
Electronic Micro balance and
Thermal System consisting of
Central Processor and hot stage
and thermal microscopy
Leitz Universal Polarised Light
Microscope for transmitted Light
Applications with micro photography
system.

R & D Manpower

	Qualification	Full time
Scientific & Technical	Doctorate	5

Library Facilities

: The Centre is gradually setting up a library consisting of core books and journals directly relevant to its activities, but the excellent library facilities available in the neighbouring institutes viz IISc and RRI will be utilised.

Major achievements claimed

- Research Papers/Reports published : 20 (1992-95)
- Any other : Prof. S. Chandrasekhar FRS has won the following awards during the past 3 years :
 - (i) Meghnad Saha Medal, INSA, 1992
 - (ii) R.D. Birla Prize, Indian Physics Association, 1992
 - (iii) C.V. Raman Award, Indian Science Congress, 1993
 - (iv) Royal Medal of the Royal Society of London, 1994

Name and Designation of five Senior Researchers

- Prof. S. Chandrasekhar, Director,
- Dr. S. Krishna Prasad, Scientist,
- Dr. Sandeep Kumar, Scientist,
- Dr. Geeta G. Nair, Scientist,
- Dr. Veena Prasad, Research Associate,

CENTRE FOR MATERIALS FOR ELECTRONICS TECHNOLOGY

Address:
Electronics Niketan,
6, C.G.O. Complex,
Lodi Road, New Delhi - 110 003.

Background

: Centre for Materials for Electronics Technology (C-MET) is setup as a registered scientific society in March 1990 under Department of Electronics, with the overall objective to establish a strong base for materials R&D.

Major objectives

: To establish basic infrastructural facilities towards creating technologically strong Electronics Materials base in the country. The short term objective would be to develop economically viable technology for some critical Electronics Materials identified under core programme.

Major research areas

: High purity metals, Thick film materials, Basic chemicals, Semiconductors, PTC thermistors, High purity Ferrites etc.

Initial recognition by DSIR : 1992

Income and R & D expenditure:

	(Rs. in lakhs)		
Income	1992-93	1993-94	1994-95
Donations received	Nil	Nil	Nil
Grants received	125.00	235.00	258.11
Other income	Nil	Nil	Nil
Expenditure on R & D			
● Capital: 150.28	243.57	152.50	
● Recurring:	93.72	92.45	95.59

Infrastructural facilities:

	Hyderabad	Pune	Thrissur
Land & Building			
i) Land in acres	15.00	5.00	5.74
ii) Building area (sq. meters)	2274.00	1914.00	1724.00
iii) Value in lakhs	243.79	175.81	170.21

Equipment facilities : Gross value : Rs. 155.41 lakhs

List of sophisticated equipments

- : ● ICP-OES
- Particle Counter
- Gas Chromatograph
- Atomic Absorption Spectrometer
- Impedence Analyser

● R&D Manpower:

	Qualification	Full Time
Scientific & Technical	Doctorates	15
	Post Graduates	10
	Graduates	10
Social Sciences & Others	Post Graduates	6
	Graduates	4

Library facilities : Books related to Electronics Materials are available.

Major achievements claimed :

- Technologies developed and ready for upscaling 14
- New techniques/methodologies developed and implemented 1
- Patents filed 1
- Research papers/Reports published 16
- Seminars/Conferences attended/organised 16
- Awards won 2

Name and Designation of Senior Researchers

- Dr. S.G. Patil, Executive Director, C-MET & Scientist-in-charge, C-MET, Pune
- Mr. I.C. Rao, Programme coordinator, C-MET
- Dr. Muniratnam, Scientist-in-charge, C-MET, Hyderabad
- Mr. Sasidharan, Scientist-in-charge, C-MET, Thrissur
- Dr. D.P. Amalnerkar, Scientist, C-MET, Pune

CENTER FOR STUDY OF MAN AND ENVIRONMENT

Address
CK-11, Salt Lake,
Sector-II,
Calcutta-700 091.

Background

Status of the SIRO	: Registered Society
Year of establishment	: 1978
Major objectives	: Environmental research
Major research areas	: • Environmental monitoring & Impact Assessment • Natural Resources Management & Planning • Socio-economic appraisal • Environmental Health appraisal
Initial recognition by DSIR	: 1987

Income and R & D expenditure

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donations received	0.15	0.31	0.10
Grants received	36.21	36.95	77.79
Other income	0.21	1.64	2.02
<i>Expenditure on R & D</i>			
• Capital	4.47	1.90	14.59
• Recurring	31.96	40.05	44.47

Infrastructural facilities

Land & Building	: Two storied building having about 400 sq.m. of covered space built at a cost of Rs. 14.0 lakhs (approx)
Equipment facilities	: Gross Value : Rs. 20 lakhs

R & D Manpower:

	Qualification	Full time	Part time
Scientific & Technical	Doctorates	7	2
	Post Graduates	12	2
	Graduates	6	—
Social Sciences & Others	Post Graduates	1	—

Library facilities	: In-house library with books on environment numbering 500. Subscribes to three journals.
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List of sophisticated equipment :	• Atomic Absorption Spectrophotometer with Accessories • Gas Chromatograph with accessories • Computers with printers • Digitiser & Plotter (A 1)
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Major achievements claimed :

- Research papers/reports published : 15 research papers published in 1994 by members of the organisation. 10 reports finalised in 1994.
- Seminars/Conferences organised/attended : 2 Seminars organised during 1994. Several seminars attended by scientists and members of the organisation.

Names and Designation of five Senior Researchers :

- Dr. A.K. Saha, Hony. Secretary
- Prof. A.B. Biswas, Member, Executive Council
- Prof. S.P. Das Gupta, Vice-Chairman, Executive Council
- Dr. S. Banerjee, Member, Research Council
- Dr. C. Chakrabarti, Sr. Scientist

CENTRE FOR WATER RESOURCES DEVELOPMENT AND MANAGEMENT

Address:
Kunnamangalam (MBR)
Kozhikode 673 571
Kerala, India.

Background

CWRDM established in 1978 by the Government of Kerala as autonomous Institute with its headquarters at Kozhikode. The Centre also has six subcentres in different parts of Kerala headquarters. It has nine division - Surface Water, Groundwater, Water Management (Agri), Water Quality and Environment, Education & Extension Computer Applications, Library Documentation & Information, Nuclear Hydrology and Administration & Finance and several central facilities like Central Water Analysis Laboratory, Cartography Reprography, Manned Observation Stations, Remote Sensing Cell and Museum. The Centre receives grant from the Government of Kerala and project grants from state national and international agencies.

CWRDM has more than 300 scientific, technical administrative and project staff. The scientific manpower comprises of a multidisciplinary team on compassing hydrology, geology, civil, environmental agricultural engineering natural and social sciences, etc.

The Centre has well equipped laboratories and library. The laboratories and research facilities include field stations for Hydrologic, Meteorologic, Hydrogeologic, Agreclimatic and Water Quality, Data Monitoring, Micro Computer and other computational facilities, Water Quality and Isotope laboratories, Remote sensing and laboratories, Equipments for Drilling and Associated Lifting facilities etc.

Major objectives

- : (i) To function as a centre of excellence for advanced research training and extension on all aspects of water resources.
- (ii) To Institute advanced studies and research in the field.
- (iii) To develop and execute teaching programmes and to organise workshops and seminars and to provide extension services.
- (iv) To act as an advisory and functional institution in planning and execution of projects on water.
- (v) To act as a store house of information on water.
- (vi) To collaborate with national and international agencies.

Major research areas

- : Studies on floods and droughts, landslides, soil erosion and sedimentation hydrology and hydrogeology of coastal alluvium lateritic formations and hard rock areas, irrigation technology with special reference to cash crops river basin development and watershed management water quality and relate environmental issues.

Income and R & D expenditure

<i>Income</i>	1992-93	1993-94	(Rs. in lakh)
State Government Grants	212.00	152.00	1994-95
Project	12.81	68.89	177.00
			43.00

Infrastructural facilities

- Land : Area: 160 ha
- Building : Area : 10,000 Sq.ft.

List of Sophisticated Equipment:

Flame Photometer
 Gas Liquid Chromatograph
 Laminar flow aseptic chamber
 Liquid Scintillation Counter
 Mercury Analyser
 Neutron Moisture gauge with scalar rate meter
 Pulse Polarag
 UV vis
 Carbondioxide Analyser
 Leaf Area Meter
 Pressure Plate Apparatus
 Differential Thermal Analyses
 Terrameter
 Automatic Water Level Recorders
 Ultra Low Level Liquid Scintillation Spectrometer

R & D Manpower : 301

Library facilities : Library has a collection of 9000 books, 70 journals, 3000 reprints etc. covering various aspects of water science and technology. It offers current awareness bibliographic and newsclipping services to the staff apart from lending and reference.

Major achievements claimed:

- Research Papers/Reports Published : 20 Nos. (1992-1995)
- Research Papers presented : 65 Nos.
- Seminars/Workshop Organised : 18

Name and Designation of Researchers:

- Dr. S.P. Rajagopalan, Head Computer Applications Division
- Dr. S. Rajagopalan Nair, Head Water Quality and Environment Division
- Dr. K.M. Varaden, Head Sub Centres
- Dr. K. Vasu, Head In-charge, Nuclear Hydrology Division
- Dr. K.V. Satheeson, Head In-charge, Water Management Division.

CONSULTANCY DEVELOPMENT CENTRE

Address

India Habitat Centre, 2nd Floor,
Zone-IV(B), East Court,
Lodhi Road, New Delhi-110 003.

Background:

- Status of the SIRO : Society
- Year of establishment : 1986
- Major objectives : To promote growth of consultancy profession in the country; To create database of existing consultancy organizations and individual experts in different disciplines and to undertake scientific research in disciplines covering social and applied sciences in the context of consultancy profession.

Initial recognition by DSIR : January, 1991

Income and R&D expenditure:

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations Received	Nil	Nil	Nil
Grants Received :	18.00	16.90	18.95
<i>Expenditure on R&D</i>			
• Capital	Nil	Nil	Nil
• Recurring	5.09	5.72	3.52

Infrastructural facilities:

- Land & Building : Area: 10,000 sq.ft;
Value: Rs. 182 Lakhs.
- Equipment facilities : Gross Value: Rs. 21.76 Lakhs.

List of equipment

Computer and Allied Equipment

- R & D Manpower:

	Full Time
Scientific & Technical	8
Social Sciences and others	1

- Library facilities : Library facilities are being reorganised after shifting office to India Habitat Centre

Major achievements claimed:

- Seminars/Conferences attended/organised and other research oriented activities
 - i) Preparation of National Directory, of Consultants
 - ii) Technology Profiles of selected countries
 - iii) Study Reports relating to technologies and industries in India and export potential of consultancy services

- iv) Over 40 Contact Programmes
- v) Over 25 Regional Training Programmes
- vi) International Training Programmes and Workshops
- vii) One-year Post-Graduate Course in Consultancy Management
- viii) Annual Awards to outstanding Consultants
- ix) Registration of Consultants with profiles of consultants operating in various areas of speciality
- x) Providing training to research associates in Non-conventional Energy Sector

Name and Designation of Senior Researchers

- Mr. Ramesh C. Bajpai, Director General
- Mr. R. Gopinath, Director (Development)
- Maj. Gen. M.C. Rawat (Retd.) Principal Consultant
- Mr. S.K. Mohindra, Principal Consultant
- Mr. Jagmohan, Principal Consultant
- Mr. C.D. Khurana, Consultant

DABUR RESEARCH FOUNDATION

Background

: Established in 1979. Conducting research in the area of Ayurvedic, Pharmaceutical, Cosmetics, Oils, Food, Veterinary and Bulk Drug. Preparation of documents for Product Registration in various countries.

Income and R & D expenditure

		(Rs. in lakhs)	
<i>Income</i>	1992-93	1993-94	1994-95
Donations received	41.90	78.86	20.35
Grants received (cash in Hand)	180.00	52.00	—
Other income	66.68	98.95	64.78
<i>Expenditure on R & D</i>			
● Capital	97.09	145.05	151.27
● Recurring	108.02	174.61	306.69

Infrastructural facilities

Land & Building : Rented premises

Equipment facilities: : Rs. 200 Lakhs.

List of sophisticated equipments : - Automatic Dissolution Test Apparatus (2), Flame Photometer, G.C. Nucon (4), Gas Chromatograph, HPLC (9), HPTLC I.R. Spectrophotometer, Karl Fischer, Melting Point apparatus, Photofluorometer, Potentiometric Titrator, Preparatory High Pressure Liquid Chromatograph (2), Rotavapour (3), UV Visible Spectrophotometer, Viscometer, Volumetric Karl Fischer and Water Purification System.

R & D Manpower

	Full time
Scientific & Technical	86
Others	7

Library facilities

: 1300 books are available on drugs & pharmaceuticals. 700 bound periodicals are available. 181 titles are received by the Library for 1995.

On CD-ROM Technology, the following databases are subscribed by the library:-

International Pharmaceutical Abstracts (IPA). Analytical Abstracts. Kirk

Address:
8/3, Asaf Ali Road,
New Delhi-110 002.

Othmer's Encyclopaedia of Chemical Technology. Current Contents: Life Science Current Contents: Agriculture, Biology & Environmental Science and MEDLINE etc.

ON LINE INFORMATION SYSTEM:-

Facilities are available as DIALOG, DATA-STAR & STN

Major achievements claimed

- **Ayurvedic:**

Trifla Guggulu Tablets, Kanchnar Guggulu Tablets, Lacton Lipistat Capsules, Tricawin Vaginal Tablets, Diarnet Capsules, Kanchan Vati, Sukramatrika Vati, Saptamrit Lauha, Rohitak Lauha, Vidangadi Lauha.

- **Pharmaceuticals:**

Paclitaxel for injection concentrate, Gentamicin Injection, Metoclopramide Injection, Diclofenac Sodium Injection, Doxorubicin Injection, Cisplatin Injection, Ibuprofen 200/400, Providone Iodine Solution/Ointment/Mouth wash, Tamoxifen Citrate Tablet 10mg, Optima forte 18/29, Amoxycillin Kid Tab, Ampicillin Kid Tab, Cephalexin Kid Tab, Ampicillin and Amoxycillin Kid Tab, Enteric coated Diclofenac Tablets, Co-trimoxazole Tabs & DS

- **Cosmetics:**

Silk care Shampoo with Apricot, Amla, Lemon & coconut, Green Cream, Fair Glow Cream, Denta Care, Herbal Shaving Cream, Double Mint Toothpaste, Herbal toothpaste.

- **Food Products:**

Banana Powder, Fancy Vinegar, Chilli Paste, Flavoured glucose, Hajmola Candy variants, Rose Syrup.

- **Oil:**

Vatika Hair Oil, Amla Plus Hair Oil

- **Veterinary:**

Pachoplus, Janova, Livfit Vet Premix, Livfit Liquids, Expan Liquid

- **Basic Drug:**

Paclitaxel, Terfenadine, Cetirizine Dihydrochloride, Chromolyn Picolinate, Fluconazole.

- **Clinical Trials and Toxicity Studies:** Paclitaxel for Injection concentrate, Chyawanprash, Livfit Tablets, Hypolipidemic capsules, Clean-N-Clear capsule and cream, Tamrabhasma, Antileucorrea Vaginal Tablets, Mercurials, Galactagogue, Greneem Capsule, Rheumatil Gel, Herbal Cough Syrup, Anti Diarrhoeal Capsule

- **Improvement of Existing Products/Processes:** Calcium Carbonate Tablets, Aspirin Tablets, Calcium Products, Microneg Tablets, Multivitamin & Multi Minerals capsules, Kreeme Hun Tablets, Nuren 200 Tablets, Nuren - 400 Tablets, Yograj Guggulu Tablets, Pancha hara Capsules, Honey, Lal Tail, Shilajit Capsules, Sharbat E Amla, Capsico-sauce, Rose water/Kewara water.

- **Technology developed and ready for upscaling:**

Antacid Tablets and Liquid (Variants), Fluconazole Capsule

Norfloxacin Tablets Spirinula Cap/Tabs.

Injectons: Fluorouracil, Dexamethasone, Ranitidine, Methotrexate, Carboplatin, Bleomycin, Chloroquine, Frusemide, Etoposide, Ciprofloxacin, Amikacin, Ampicillin, Cyclophosphamide, Mesna and Doxourbicin for Injections.

- Patent Field : 1
- Research papers/Reports Published : 5
- Seminars Conferences: 30 Scientists attended IPCA, Chandigarh attended/organised: Introduction of Pharmaceutical Process in Ayurveda to Korean, Chinese, Brazil and S.African delegations. Usage & Adverse effects of Intaxel Injection to Oncologists from India & Abroad. Herbal Remedies - Revisited, by Dr. D.B.A. Narayana at IPCA etc.

Name and Designation of Senior Researchers

- | | |
|------------------------|------------------------|
| ● Dr. Anand C. Burman, | Director |
| ● Dr. D.B.A. Narayana, | Deputy General Manager |
| ● Dr. R. Sunder, | Manager |
| ● Dr. S.K. Adhikari, | Manager |
| ● Dr. Vimal Sehrawat, | Manager |
| ● Mr. Ravi Jain, | Manager |
| ● Mr. Sameer Agarwal, | Manager |
| ● Mr. Praveen Khullar, | Manager |



Tablet Manfg & Coating Machines

DALMIA INSTITUTE OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Address:

P.O. Box No. 2,
Rajgangpur-770 017
Distt. Sundergarh.

Background

- Status of the SIRO : The Institute was registered under Registration of societies Act. 1860 in Sept. 1971.
- Major objectives : Research on high temperature technology in respect of development and application of high temperature and other construction materials.
- Major research areas : Ceramics including refractories and cement.

Initial recognition : 1976

Income and R & D expenditure

Income	1992-93	(Rs. in lakhs)	
		1993-94	1994-95 (Provisional)
Donation Received	50.00	40.00	53.25
Other income	92.72	88.34	142.11
Expenditure on R & D			
• Capital	48.09	42.99	45.74
• Recurring	55.80	39.42	76.25

Infrastructural facilities

Land & Building : Value : Rs. 180.84 Lakhs
Equipment Facilities : Gross Value : Rs. 274.04 Lakhs

List of sophisticated equipment:

Thermal conductivity tester
Hot load apparatus
Thermal expansion apparatus
Torsional creep test apparatus
Hot abrasibility test apparatus
Autoclave testing apparatus
Atomic absorption spectroscope
Universal research optical microscope
Simultaneous DTA/TG apparatus
X-Ray Diffractometer
Laser particle size analyzer
Gas fired furnace upto 2300 deg.C
Cold isostatic press
Tonipack 300 combined compression and Bend test equipment
Induction furnaces

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical	Doctorat	7	03
	Post-Graduate	12	
Social Sciences & others	Graduate & below (Above Matric)	20	

Does not include 36 persons engaged through Contractors

● Library facilities :	No. of Books	..	810
	No. of Journals	..	35

Major achievements claimed

● Technology developed and Transferred

- (i) Improved magnesia-carbon bricks for L.D. Converter and secondary refining ladles.
- (ii) Development of magnesia-carbon and magnesia-chrome refractory products from Zimbabwean raw materials - sponsored by Govt. of Zimbabwe through MECON
- (iii) Development of super duty silica bricks having low flux factor for glass industries.
- (iv) Development of sintered alumina, sintered mullite, magnesia-alumina spinel as import substituted products for castbles and precast products.
- (v) Development of improved quality magnesia-chrome bricks for AOD vassels
- (vi) Development of mag-carbon refractories for EBT taphole system.

● Technology Development and ready for upscaling.

- (i) Development of ceramic radomes for Akash and Nag missiles project sponsored by Defence Research & Development Laboratory, Ministry of Defence, Govt. of India.
- (ii) Feeder channels for glass industries
- (iii) Orifice ring for glass industry
- (iv) Technology for achieving optimum setting times of cement incorporating by-product gypsum by controlled grinding of the latter (gypsum).
- (v) Technology for increasing Blast Furnance slag contents in Portland Slag Cement by application of additives, which does not need to further increase the fineness of the cement with increase of slag content.

● New Techniques/methodologies Developed and Implemented :

- (i) Simulative testign of corrostion and erosion resistance of refractory products by Induction furnance.
- (ii) Methodology for estimation of glass content in Indian Blast Furnance Slag by X-Ray Diffractometry (XRD), which is much more accurate than the microscopy method.
- (iii) Methodology for quick estimation of slag in Portland Slag Cement by X-Ray Diffractometry which needs about 15 minutes per sample.
- (iv) X-Ray Diffractometry (XRD) method for prediction of both 3-days and 28-days compressive strength (CCS) of Portland Slag Cements, which needs aroun 20 minutes only and the claculated CCS values, in average, vary from the conventional test values by about $\pm 4.5\%$.
- (v) Rapid spectrophotometric method for determination of fluoride in silicates, based on alkaline fusion at low temperature which does not need any separation.

- Patents filed ; 1
- Research papers/ : 24
Reports Published
- Seminars/Conferences : 15
Attended/organised

- Awards won : Director of the Institute Dr. J.D. Panda won the "Award for Excellence in Refractory Technology (1993)" instituted by the Indian Ceramic Society.

Name and Designation of Senior Researchers

Dr. J.D. Panda, Director

Dr. G. Goswami, Pr. Scientist

Dr. N. Sahoo, Pr. Scientist

Dr. S.V. Ilango, Scientist

DECOSPIN RESEARCH FOUNDATION

Address:
Decospin Research Foundation,
Rajwada, P.B. No. 130,
Ichalkaranji-416 115.
Dist. Kolhapur, (Maharashtra).

Background

Status of the SIRO	: Charitable Research Association
Year of establishment	: 1974
Major research Areas	: Textiles
Initial recognition	: 1974

Income and R&D expenditure:

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donations Received:	Nil	Nil	Nil
Grants Received:	Nil	Nil	Nil
Other Income	2.54	1.89	2.00
<i>Expenditure on R&D</i>			
• Capital	—	—	5.17
• Recurring	2.27	1.66	2.00

Infrastructural facilities:

Land & Building	: Situated in the premises of Textile and Engineering Institute, Ichalkaranji.
Equipment facilities	: Gross Value: Rs. 16 Lakhs at the time of purchasing.

List of sophisticated equipment :

- Classimat-II yarn Faults classifying system.
- Auto looms such as cimmico, Ruti-C
- Air jet looms

R&D Manpower:

	Qualification	Full time	Part time
Scientific & Technical			
	PostGradates/	—	3
	Graduates	2	3
	Dipolma Holder	1	—
	others	1	—

Library facilities	: Fully equipped with basic textile books and conference reports.
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Major achievements claimed:

- New Techniques/methodologies developed and implemented.
 - i) Microfilament Weaving.
 - ii) Studies in Acrylic cotton and Acrylic Polyester blend spinning.
 - iii) Renovation of plain loom.
 - iv) Studies in classmat faults.

Name and Designation of five Senior Researchers:

- Prof. C.D. Kane, Officer Incharge.
- Prof. P.V. Kadole, Co-Ordinating Incharge.
- Shri U.J. Patil, Maintenance Incharge.
- Shri A.G. Langote, Officer Incharge.
- Shri B.K. Kumbhar, Officer Incharge.

Registe
40, Max
Lodi Est

DELHI LIBRARY NETWORK (DELNET)

Registered Address:
40, Max Mueller Marg,
Lodi Estate, New Delhi-110003

1. Background

Status of the SIRO

: Delhi Library Network (DELNET) Association

Year of establishment

: Established/registered in 1992 July.

Major objectives

(i) Promote sharing of resources among libraries by developing a network of libraries by collecting, storing and disseminating information and by offering computerised services to the users.

(ii) Co-ordinate efforts for suitable collection development and reducing unnecessary duplication whenever possible.

Major research areas

: Resource Sharing; Software Development for Library Network Applications, Development of Union Catalogue & Communication Networks;

Initial recognition by DSIR

: 1993

Income and R & D expenditure

Income	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
Donations Received:	Nil	Nil	Nil
Grants Received:	0.15	2.82	8.02
Other income:	Nil	0.95	2.15
			(membership)

Infrastructural facilities

- Land & Building Area: 1 acre of land in JNU Campus.
- Equipment Facilities : Gross Value : Rs. 11.5 Lakhs

List of equipment

: Hardware

- 486 Landmark
- 486 Sx Landmark
- Modems
- Printers

Softwares

- AT & T UNIX
- Basis
- Libris

R & D Manpower

: 5

Library facilities

: Utilising IIC Library facilities.

Major achievements claimed

- Technologies developed and ready for upscaling : Software for Union lists of Current Serials, Software for 'Specialists; India' Database.
- New Techniques/methodologies developed and implemented : Creation of Union Catalogue of books. Creating parameters necessary for developing software for Union Catalogue.

- Research papers/Reports published : 7
- Seminars/Conferences attended /organised. : Organised:—
 - (i) Indo-British Meet on Library Networking.
 - (ii) National Workshop on Library Network Services
- Any other : Saved Rs. 1 Crore in foreign exchange by rationalisation & resource sharing.

Name and Designation of Senior Researchers

- Mr. H.K. Kaul, Director
- Mrs. A. Vijaya Murthy, Secretary
- Mr. Anjan Nath, Sr. Network Asstt.
- Mr. Ajay K. Singh, Sr. Network Asstt.
- Ms. Sangeeta Kaul, Network Asstt.



Delnet's on-line Demonstration of the Union Catalogue & other facilities

DR. REDDY'S RESEARCH FOUNDATION (FORMERLY KNOWN AS STANDARD RES.CENTRE)

Address
7-1-27, Ameerpet
Hyderabad-500 016.

Background

Status of the SIRO : Company limited by Guarantee Regd. under section 25 of the Companies Act, 1956

Year of establishment : 1986

Major objectives

- **Basic Research** : New drug discovery & development program comprising design/synthesis/isolation/evaluation of new molecular entities as novel therapeutic agents.
- **Applied Research** : Develop indigenously feasible synthetic routes, non-infringing processes and patent worthy inventions for bulk drugs, intermediates and biopharmaceuticals.

Major research area: Basic Research

- Chemical R&D
- Natural Products R&D
- Biochemistry R&D
- Pharmacology R&D
- Drug Design & Molecular
- Modelling Process R&D
- Analytical R&D
- Biotechnology R&D
- Medicinal Plants R&D.

Income and R & expenditure

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donations received	Nil	Nil	Nil
Grants received	245.56	522.57	922.32
Other income	(25.00)	(248.00)*	—
<i>Expenditure on R & D</i>			
● Capital	176.17	755.59	571.01
● Recurring	59.29	179.73	399.20

*Loan from Industrial Development Bank of India under Asset Credit Scheme.

Infrastructural facilities

Land & Building	:	Area	Value (Rs. lakhs)
	Land	: 12.90 acres	23.57
	Building	: 1,00,000 sft.	329.69
Equipment Facilities:		Rs. 690.33 lakhs	

List of sophisticated equipment :

GC-LC-MS
200 MHz FT-NMR
Single Crystal XRD
FT-IR
CHN Analyser
High Resolution UV-VIS Spectrophotometer
Differential Scanning Calorimeter
HPLC Systems
Gas Chromatographs
Medium Pressure Liquid Chromatograph

Preparative HPLC
 Silicon Graphic Workstation For Drug Design
 Transducer & Control unit
 Infusion pumps
 Spectrofluorimeter
 High speed cndrifuge
 Ultracentrifuge
 LC & Electrophoresis
 Top Count
 Liophiliser

R & D Manpower

	Qualification	Full time
Scientific & Technical	Doctorates	34
	Post graduates	61
	Graduates	27
	Others	10
Social Sciences and others:	Graduates	17
	Non-Graduates	19

• Library facilities

-Books	:	5000 Bound Volumes
-Journals	:	110 Subscribed (1995-96)
-On-line Searching Facilities	:	Dialog; STN
-CD-Rom	:	Pharmastructures; Trilogy

Major achievements claimed

- Technologies developed and transferred for upscaling/ commercialization : Process know-how for a number of bulk drugs and intermediates on bench scale have been developed and transferred to the sponsoring companies for scale-up and commercialization.

Year	Process	Developed
1992-93		10
1993-94		13
1994-95		19

- New Techniques/methodologies developed and implemented :

As part of basic research, over 165 new compounds including novel analogs of natural pharmacophores have been synthesized and evaluated in various therapeutic screens such as antibacterial, antifungal, antidiabetes and anticancer. Four patents have been filed in India as well as US, covering new chemical entities in the therapeutic areas Cancer and Diabetes.

- Patents Filed :

- Seminars/Conferences attended/organised :

Seminars / conferences attended: 24
 Organised in-house: 32

Name and Designation of five Senior Researchers

Dr. A. Venkateswarlu, President

Dr. A.K. Sadhukhan, Vice President-Biotech R&D

Dr. G. Om Reddy, Vice President-Technical

Dr. B.B. Lohray, Vice President-Chemical R&D

Dr. Swaminathan Subramaniam, Vice President-Clinical Research



Natural Products Research Lab: Active Principles/Natural Pharmacophores Discovery

ELECTRICAL RESEARCH & DEVELOPMENT ASSOCIATION

Address:

501, Kakad Chambers,
132, Dr. Annie Besant Road,
Worli, Mumbai-400 018.

Income and R&D expenditure

		(Rs. in lakhs)		
		1992-93	1993-94	1994-95
Income	:			
• Donations Received	:	7.07	8.17	10.55
• Grants Received	:	—	23.6	—
• Other Income	:	76.68	83.51	106.21
Expenditure on R&D	:			
• Capital	:	26.94	39.33	48.67
• Recurring	:	90.90	103.83	109.69

Infrastructural facilities:

Land & Building	: Area	: 25 Acre
	Value	: Rs. 146.06 Lakhs
Equipment facilities	:	Gross Value: Rs. 296.39 lakhs

List of sophisticated equipment :

Thermal analysis system,
Gas Chromatograph,
High pressure Liquid, Chromatograph (Model 200 Series)
UV Visible Spectrophotometer, (Model UV 240)
Infra-red Spectrophotometer, (Model SP-300)
Unidirectional Abrasion, Resistance Tester
Arc Resistance Tester
Comparative Tracking Index, 'Enamel Wires Test
Resistivity Meter,
Humidity Chamber,
Oxygen Index Estimation, Apparatus
LCR (Variable Frequency), Bridge
'General Radio', USA
Universal Testing Machine,
Microscope (Model-21),
Franklin Insulation Tester, (Model No. 7105A)
Horizontal Tensile Testing Machine,
Vibration Test Set up, (Type 726 PA 2000 DC)
Impulse Voltage Generator,
Impulse Voltage Generator,
Low Voltage Impulse Generator,
HV Transformer,
Kelvin Wheatstone Bridge, (Model 4102 GBIE)
DC HV Unit,
Toepler pump, 'Strohein Instruments'
Thermal stability equipment
Fire resistance tester
Portable Microscope
Direct Reading Ferrograph, (Model DR-3)
Power Meter
Eddy current Drive, Electrical Endurance/make break test facility
AC Voltage Current Standard (Type-2558)
Lux Meter,
Graphic Plotter, (Model 7470A)
Sub-standard Energy meter,
Gonio Photo meter,
Digital Resistance Meter, (Model LR 2045)
Photometric integrating Spheres,
Bucholz Relay test facility, Radiography Analysis X-ray

R&D Manpower:

	Qualification	Full time
Scientific & Technical*	Doctorates	
	Post graduate	77
	Graduate	28
Library facilities	: Maintain a Documentation & Information Centre devoted to Power Engineering & related subjects, provides number of Information Services.	

Major achievements claimed

- Technologies developed and : Fire resistance Coating for Cable.
Transferred for upscaling/ Glow Wire Test Apparatus.
Commercialisation
- Technologies developed and :
ready for upscaling Polymer Concrete.
- New Techniques/methodologies : Thermosyphon.
Developed and implemented
- Patents Filed : 1
- Research Papers/Reports : 26
Published
- Seminars/Conferences : 14 workstages, 13 Symposium &
attended/organised : 20 training courses conducted

Name and Designation of five Senior Researchers

- Dr. M. Rama Moorthy, Director
- Dr. M. S. Padbidri, Advisor
- Mr. M. K. Das, Sr. Manager (Materials)
- Dr. V. Shrinet, Manager (Insulation)
- Mr. M. K. Shah, Manager (L. V., Prod.)

ELECTRONICS RESEARCH AND DEVELOPMENT CENTRE OF INDIA

Address

Electronics Niketan,
6, C.G.O. Complex, Lodhi Road,
New Delhi-110 003.

Background

Status of the SIRO : ER&DCI, Calcutta Unit, a scientific society of Deptt. of Electronics, Govt. of India was registered in the year 1990.

Major objectives :

- To undertake application oriented research, design and development in electronics in the Eastern part of India so as to generate State-of-the-art production worthy, marketable and field-maintainable products and systems.
- To initiate R&D programmes in selected areas on a timebound and mission-oriented manner in line with other technology development initiatives launched by the Govt. of India.
- To promote an accelerated growth of electronic industries in the region by working in close co-operation with the State Electronics Development Corporations and other public and private sector industries including small and medium scale industries in the region as well as with the educational institutions like Indian Institute of Technology, Universities and the like.
- To fix-up priority on R&D activities pertaining to user-cum-sponsor linked electronic projects for forging ahead along lines of attaining financial self-sufficiency to the extent possible quite in keeping with the basic principles of the NEW ECONOMIC POLICY of the Govt. of India.

Major research areas :

- Industrial Communication
- Access Control, Security and Office Automation;
- Control and Instrumentation
- Power Plant Automation
- Modernisation of Agro based Industries-Tea and Jute (Govt. of India mission funded by UNDP)
- System Solution
- IT Solution
- Industrial Electronics
- EMI Engineering
- Education and Training

Initial recognition by DSIR : 1992

Income and R & D expenditure

		(Rs. in lakhs)	
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations Received	Nil	Nil	Nil
Grants Received	80.00	65.00	77.00
Other Income	6.23	9.65	34.01
<i>Expenditure on R&D</i>			
Capital:	14.37	14.48	30.77
Recurring:	38.24	47.38	69.11

Infrastructural facilities

Land and Building	: Area-3.86; Value Rs. 44. lakhs
Equipment facilities	: Gróss Value - Rs. 82.76 Lakhs

List of sophisticated equipments

- The laboratories are well equipped with sophisticated facilities like 'Analog/Digital Storage of oscilloscope, 80 channel logic analyser, spectrum Analyses, laser jet printers, SCO Unix System, Hewlett Packard Plotter, etc.

R&D Manpower

	Qualification	Full time
Scientific & Technical :	Doctrate	1
	Post Graduate	15
	Guaduate	10
	Diploma engg./Certificate	13
Social Sciences & Others :	Graduate	12
Library facilities :	Technical/General	1432 nos.
	Data Book	313 nos.
	Periodicals	329 nos.
	Additions not yet Classified	426 nos.

Major achievements claimed

- Remote Radio Control System of EOT Cranes: VHF noiseless command communication with failsafe protocol enables the crane operation to control his crane from the ground level with an increased degree of ease and convenience. Taker - Steel Authority of India Ltd. for Bokaro Steel Plant.
- Isolated Process Transmitter: Optically Isolated Current loop transmitter is successful indigenisation for any process plant. Taker—Gas Authority of India Ltd.
- DC-DC Converter: A versalite power supply unit in two versions - one of Metro Railways, Calcutta and the other for Gas Authority of India Ltd.
- Note Book Computer : 486 DX based note-book based on Intel's revolutionary SL architecture. Taker—Webel Informatics Ltd.
- Coal Weighing System: Specially designed for use in wagon tippler at coal handling plants. Taker—Kolaghat Thermal Power Plant.
- Data Acquisition System for Power Plants: A transputer based parallel processing environment for rugged and powerful data acquisition and processing. Taker—Kolaghat Thermal Power Plant.
- Vehicle Paging System for Toll Plaza : A handy system for efficient Toll Plaza Operation on a busy junction. Taker—Webel Business Machines Ltd. for Vidyasagar Setu, Calcutta.
- TV Demodulator : A low cost indigenisation for Doordarshan's telecast quality monitoring. Taker—Webel Mediatronics Ltd. for Doordarshan, India
- Electronic Route Guide System : A unique product with a eye-catching presence for the convenience of the commuters. Taker—WBEIDC Ltd. for Salt Lake Notified Area Authority, Govt. of West Bengal.

- (x) Computerised Attendance Management System : A low cost indigenisation for effective office automation. Taker—WEBIDC Ltd. DRDL.
- (xi) Maintenance Management System : A RDBMS software for efficient maintenance program. Taker—Kolaghat Thermal Power Plant.
- (xii) Bar Code Based Access Control : Adoption of Barcode technology for staff attendance, visitor's entry, cargo handling, carparking and many others. Taker—Airways, supermarkets etc.
- (xiii) The centre has taken-up a Human Resource Development Programme and accordingly set up an Advanced Computer Education Centre : accredited by Deptt. of electronics, Govt. of India for its 'A' and 'C' level courses. Apart from giving training, this unit is also engaged in providing system solution and developments specially in computer networking and database management system.
- (xiv) Micro-controller based Auto-Levelling System : at Breaker Cam for Jute Industries for improving the quality of jute yarn at Jute Mills. The trial run for the system has been progressing satisfactorily at Jute Mills. Sponsored by UNDP, DoE & Ministry of Textiles.
- (xv) Process Monitoring and Control System for Tea Industry : A computerised system has been developed for monitoring the withering process of tea leaves. four such systems are having successful field trials at a Tea Garden in Jalpaiguri Dist., West Bengal.
- (xvi) 48V Signal Isolator for GAIL : GAIL has placed formal request for supply of 15 prototype units.
- (xvii) 3 Channel Isolate for GAIL : A special, type of 3-Channel Process Signal Converter with Linear Opto Isolation is being developed for GAIL, Guna, Madhya Pradesh.
- (xviii) Development of PLC Power Supply : A PLC Power Supply of 5, 13 Amp and -5V, 1.3 Amp is being developed. A lab prototype has been successfully tested at NTPC, Rihandnagar.
- (xix) RTU Power Supply : A compact multi output unit having efficiency more than 90% is being developed for GAIL, Vijapur, Madhya Pradesh.
- (xx) Data Communication through Power Line : The technology involves use of power frequency (50 Hz) as a carrier for FSK modulated digital Transmission. The Power Line Communication Technology will be used to reduce its cost and introduce it in office automation activities.
- (xxi) Radio Control of Fire Fighting System at Airport : A demonstration-cum-trial system has been installed at Calcutta Airport and it is functioning satisfactorily. Airport Authority will soon procure a system for the Dum Dum Airport, Calcutta.
- Seminar/conferences
- (xxii) The scientists/engineers of the centre had presented 12 papers in National Conferences, 8 papers in International Conferences. The Director of the centre, an eminent scientist had got 8 papers published in different journals/publications/magazines of national and international repute and for his relentless effort in the field

● Awards

The Director has earned International EMC Award for 1991, M.N. Saha Award of Institution of electronics and Telecommunication Engineers (IETE), India for the year 1994 and Society for EMC Engineers (India) [SEMCE (I)] Award 1993.

Name and Designation of five Senior Researchers

- Brig. (Dr.) Gunendra Kumar Deb, Director
- Shri Shankar Nath Banerjee, Joint Director
- Shri Arindam Saha, Joint Director
- Shri Sanjay Kumar Mandal, Senior Scientific Officer
- Shri Amit Chaudhuri, Senior Scientific Officer



Prototype on TV Demodulator developed for WML, Calcutta

ELECTRONICS RESERACH AND DEVELOPMENT CENTRE OF INDIA

Address:

Agriculture College
Compound Shivajinagar,
Pune-411 005

Background

Status of the SIRO : Research & Development Institution
Year of establishment : 1991
Major objectives :

- i. To undertake application oriented and industry oriented research, design and development in electronics, so as to generate knowhow and the state-of-the art marketable and maintainable products and systems.
- ii. To play a nodal role particularly in the Western Region in electronics technology development and know-how transfer to the industry so as to attain and maintain technological competence and enhance self reliance with thrust in the area of the Wireless Communications & Microprocessor Applications.
- iii. To promote accelerated growth of electronic industry by providing R & D support and technical advice, consultancy and training to public and private sector.
- iv. To help modernise industry, improve communication facilities particularly in rural areas and enhance quality of life through application of electronics.

Major research areas :

Research & Development in Wireless Communication systems and products.

Initial Recognition by DSIR : 1992

Income and R & D expenditure :

			(Rs. in lakhs)
Income	1992-93	1993-94	1994-95
Donations Received	: Nil	Nil	
Grants Received	: 88.00	55.00	108.3
Other income	: 4.78	12.19	5.3
Expenditure on R & D			
• Capital	: 54.34	46.07	60.3
• Recurring	: 27.13	37.75	53.3

Infrastructural facilities :

Land & Building : Land Area : 1.5 acre; Value : Rs. 8.20 Lakhs

Equipment facilities : Gross Value : Rs. 138.60 Lakhs.

List of sophisticated equipment :

Synthesized Signal Generator
Spectrum Analyser
Precision LCR Meter
Vector Network Analyser
R & S—Signal Generator
LPKF—CAD/CAM Systems
Datacom Analyser
Vector Signal Analyser

R & D Manpower :

	<i>Qualification</i>	<i>Full time</i>
Scientific & Technical	Post Graduates	18
Social Sciences and Others	Graduates	11

Library facilities :

Excellent Facilities of Library having Books Worth Rs 6.65 Lacs. The Library is having Books on Wireless Communication Technology, Systems, Computers, Microprocessor Applications & Related Books, Magazines etc.

Major achievements claimed :

Within two years since its inception, the centre has been able to transfer technologies of all the five products taken up for development. The centre has developed Citizen Band Radio which has extensive applications for rural, remote, highway, private and emergency communications. The technology has been transferred to UMS Radio, Coimbatore. The Centre has transferred technology on Voice Encryption and high speed 9.6 kb/s Radio Modem for VHF wireless communications to Meltron. 1.2 kb/s radio data modem has been developed and technology has been transferred to Vintek RF Products, Bangalore. A user friendly software for computer communications over VHF sets has also been developed. Technology of CB Radio, the 1.2 kb/s radio modem and the software is being transferred to the Bharat Electronics Ltd. shortly. These modems are likely to find extensive use in police wireless, electricity boards, irrigation departments, sugar industry, NIC etc. The Centre has taken up a sponsored project on data encryption for ITI Equatorial Satcom Ltd. The Centre now proposes to undertake development of digital mobile radio communication systems, wireless PABX and rural wireless access systems. Microprocessor Application Engineering Programme (MAEP) Centre, Pune is now an integral part of the ERDC and has Automatic Test Equipment (ATE) and PC based instruments development as thrust areas. The centre undertakes various sponsored projects for private industries, Govt. R & D organizations, Public Sector undertaking etc. and has developed an excellent expertise in systems & products based on Microcontrollers, Digital Signal Processors, PC based Instruments etc. Few of the sponsored projects completed are as follows. CCTV controller developed by the Centre under meltron's sponsorship is in operation at Mazgaon Docks. A PCn 486 compatible card based on Motorola's DSP 56000 for Real Time Digital signal processing of sonar signals had been developed and is now being used by NPOL. Energy Meter Calibration system developed for India Meters would increase quality and productivity very substantially. Automotive Research Association of India and DOE have sponsored development of an Engine Control Unit (ECU) to reduce pollution from automobiles exhaust and save valuable petroleum fuel. The ECU has to meet very stringent MIL specifications and the development effort has given the Centre immense experience on ruggedization and EMI/EMC compatibility. Technology of TMS 32030 based DSP training kit has been transferred to the L & T Gould Ltd. MAEP conducted training courses on microprocessor, microcontroller and DSP application have been highly appreciated by the industry. The Centre has recently taken up development work in fuzzy logic and neural networks.

Recently a Citizen Band Radio based communication network is being installed to provide linkage between 5 village panchayat and central hospitals in Ponda, Goa as a pilot project under MP's Local Area

Development Scheme. The network will serve as a model rural communications in India where public telephone facilities are non-existent. Also MAEP Division has completed the development of Stand Alone Portable Spectrum Analyser, Microprocessor Based Elevator Controller, 8 Channel Wave Form Analyser/Recorder, Data Acquisition and Control System etc. industry sponsored projects. Considering the excellent performance of MAEP Division, DST has sponsored projects namely development Hand Held Vibration Analyser and PC based 100 MHZ Logic Analyser.

- Research papers/reports Published : 7
- Seminars/Conference : About 15 Seminars/Conferences—National
attended/organised International held in India
Attended.

Name and Designation of five Senior Researchers :

- Shri K.G. Matrapurkar, Director
- Shri S.P. Dixit, Manager (Projects)
- Shri CV. Ramdas, Asstt. Manager (Projects)
- Shri P.R. Tambatkar, Project Leader
- Shri S.A. Chafekar, Project Leader

ELECTRONICS RESEARCH & DEVELOPMENT CENTRE OF INDIA

Address
Vellayambalam,
Thiruvananthapuram-695 003

Background :

Status of the SIRO : Application - Oriented R & D Centre, a part of ER & DC India, a national level scientific society under DOE, GOI,

Year of establishment : 1974

Major objectives :

- * To undertake application - oriented Research, Design and Development in Electronics so as to generate the state of the-art productionisable, marketable, and field maintainable products and system.
- * To promote accelerated growth of Electronic Industries in the region.
- * To initiate R & D programmes in selected areas in line with other national technology development initiatives launched by the Government of India.

Major research areas :

Control & Instrumentation, Power Electronics, Computer communications, Mass communications, Strategic Electronics, AI & Expert Systems, Hardware Design, Special Systems, Software Engineering, Electronics for Rural population.

Initial recognition : 1974

Income and R & D expenditure :

	(Rs. in Lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donations Received	Nil	Nil	Nil
Grants Received	664.38	309.71	235.00
Other income	199.24	343.38	653.00

Expenditure on R & D :

● Capital	385.87	11.00	43.87
● Recurring	401.63	547.35	471.95

Infrastructural facilities :

Land : 5.03 acres of leased land.
 Building : Building area : 1,00,000 sq. ft.
 Value : Rs. 173.79 lakhs
 Equipment facilities : Gross Value : 1195.43 lakhs

List of sophisticated equipment :

(1) Logic State Analyser-HP make (2) Signature Analyser-HP make
 (3) Oscilloscope-Tektronix & Phillips (4) Data I/O E-FROM/PAL programme (5) HP pen/plotter (6) Laser Printer (7) SunWork Station, Sun spark work station (8) Noise figure meter-HP make (9) Signal generator (R & S) 100KHZ to 1GHz (10) Video Sweep Generator (Shiba soku) (11) Micro wave frequently Counter (HP make) (12) Envelop delay measuring set (Shiba Soku) (13) Spectrum Analyser (100KHZ to 23GHZ) (14) Sweep oscillator (HP) make (15) Network Analyser (HP) (300KHZ to 6 GHZ)

R & D Manpower :

	Qualification	Full time
Scientific & Technical	Doctorates	5
	Post Graduate Engineers Scientists	51
	Graduate Engineers	77
	Diploma holders	46
	ITI	53
Social Sciences & Others		157

Library facilities : Technical Library has 11,000 technical books and subscribes to more than 150 periodicals and technical journals.

Major achievements claimed :

- *Technologies developed and transferred for upscaling/Commercialisation :*

Automatic Voltage Regulator for Brushless Alternators, Spurious Signal Suppressor Units, Railway ticketing machine, TELETELL, Voice Processor card, DAS for Blooming mill, Professional Grade CD Player, Digital Record Announcement System, Realtime Announcement Unit, Digital Message Announcement System, Computer Aided Language Teaching System, Channel Interface processor, Voice processor Interface ASIC, Low bit-rate speech I/O card, Industrial Grade PC, AI Tools namely GENEX, DIAGNOS, EDGE and INTSYD, Expert System Applications such as Homeopathy Expert System (HES II) and CATSYS (Tutoring system for hearing impaired), Three-in-one Graphics Production System for Doordarshan Studios, Electronic Fish Finder, Boiler control System for a Paper Industry, PC based DCS, Neural net SER, Picture Archiving and communication System, Multipurpose Textile counter, Graphics card, Flasher Buoy, Drip Irrigation Controller, Red Palmweevil Detector, Automatic Head light dipper, KU band DRS, Teletext Processor unit, Video Processor unit, ASIC for Power Electronic applications, Expert System for slab and Bloom polishing machine.

- *Technologies developed and ready for upscaling :*
K U Band DRS, Teletext Processor unit, Video Processor unit, ASIC for Power Electronics application, Resonant Link Convertor.
- *New Techniques/methodologies developed and implemented:*
Vector Controlled AC Drives, Advanced plant Automation & Control system (APACS), Text Reading System in Indian languages for the visually handicapped.

Research papers/Reports published : 6
Seminars/Conferences attended : 44
Seminars organised : ER & DC Annual Seminar being conducted every year since 1990.

Awards Won :

- 1983 Federation of Indian Chambers of Commerce and Industry (FICCI) award.
- Electronics Components Industries Association (ELCINA) award for 1983.
- 1985 national Research Development Corporation's (NRDC) Certificate of Merit for meritorious invention was awarded to Six engineers of ER & DC.
- 1994 Udyog Rattan Award from Institute of Economic Studies (IES), New Delhi.

Name and Designation of Senior Researchers :

- | | |
|----------------------------|------------------|
| ● Dr. V.P. Kulkarni, | Director |
| ● Dr. S.R. Uttarwar, | Project Director |
| ● Shri V. K. Neelakandhan, | Project Director |
| ● CMDE. Jacob Abraham, | Project Director |
| ● Shri Rajan T. Josheph, | Group Head |

ENAR FOUNDATION RESEARCH CENTRE

Address

Gyan Mandir on River Purna,
N.H. No. 8, Village Dharagiri,
Navsari : 396 424

Background

- Status of the SIRO : Institution
- Year of establishment : 7th March, 1992
- Major objectives : The objective of the Research Centre is to serve humanity through *Fundamental Research in Pharmaceutical Sciences and Applied Research in Pharma, Food, Dentifrice and Allied fields in service of these industries
- Major research areas : (i) Application of Science of Rheology to Solid dosages.
(ii) Application of Thermal Analitical systems in Pharma Industries
(iii) Evolving Theory and Methodology of Devising Pharma Standards.

Initial recognition by DSIR : November, 1992

Income and R & D expenditure

		(Rs. in lakhs)	
		1992-93	1993-94
<i>Income</i>			
Donations Received	:	0.325	15.900
Other Income	:	-	0.028
<i>Expenditure on R & D</i>			
• Capital	:	0.005	-
• Recurring	:	0.100	1.191

Infrastructural facilities

- Land : Area : 1,20,000 sq. ft.
- Building : 45,000 sq. ft. (Proposed)

R & D Manpower

	Full time	Part time
Scientific & Technical	3	2
Social Sciences and Others	10	-
Library Facilities	Available	

Major achievements claimed :

- Technologies developed and transferred for upscaling commercialisation
- Application of "Science of Rheology to solid Dosages in Pharma Industries"

The Centre has achieved a break-through in developing an apparatus called ENAR REPOSOGAPH-640, based on the principle of Science of Rheology for determining the flowability of granules. The apparatus now manufactured on a royalty basis by M/s. Enar Chemicals P. Lt., is donated to colleges and universities and is sold on a no-profit basis to Pharma Industries. It is used for IN-Process Control of quality of granules and for monitoring the flowability of the hopper mix in tablets/capsules departments.

- Technologies developed and ready for upscaling
 - (i) Application of Thermal Analytical Systems in Pharmaceutical Sciences

The Centre has published papers on Application of Thermal Analytical (TA) Systems in Pharmaceutical Sciences, an area of research which has yet remained unexplored. This work has been very much appreciated by manufacturers of TA Instruments such as Dupont., Perkin Elmer, Netzsch and also by academic institutions and pharma industries.

The Centre has carried out extensive work on specifications and design of Thermal Analytical Systems. Based on the evaluation and performance data gathered, it is now in a position to advise pharma, Food and Dentifrice industries on the selection of a Thermal Analytical System for a specific requirement. The investigative work carried out of TA profile of Dicalcium phosphate Dihydrate and Anhydrous (by recording TG/DTA-DSC curves) has established for the first time that Dicalcium Phosphate Dihydrate is not converted to Anhydrous on heating. The Centre has now taken up a program of preparing Thermal Analytical Profiles of all pharmaceutical excipients in collaboration with WHO. This would serve as an additional physicochemical property for excipients and as a reference for Product Identity and Purity.

(ii) Data Acquisition and Control System for Instruments

The Centre has standardised PC-based data acquisition and control system for Instruments, and now recommends replacement of micro-processor-based dedicated system imported along with instruments.

(iii) Designing Quality Track for Stability of a Medicine

The Centre has designed a Quality Track and identified various areas responsible for physical, chemical and biological destabilisation resulting in therapeutic deactivation of a drug formulation during shelf life.

● **New Techniques\methodologies developed and implemented**
EVOLVING THEORY AND METHODOLOGY OF DEVISING PHARMA STANDARDS

The Centre has done monumental work in evolving theory and methodology of devising Pharmacopeia Standards and methods of analysis to test these standards. Recognising our contributions, the World Health Organisation (WHO) has sought our collaboration in devising Pharmacopeia Standards of excipients and active ingredients for inclusion in the International pharmacopeia.

In addition the Research Centre has developed interaction with British Pharmacopeia Commission and its laboratory, German pharmacopeia Laboratory, Czechoslovak Pharmacopeia Commission, various academic institutions and R & D units of Pharma Industries all over the world.

● Any Other

The Director delivers lectures in Colleges and Industries all over India on Research Work carried out at the Centre.

This activity gives good exposure to professionals in industries and academicians in colleges, and helps the Centre to have in timate interaction with colleges, institutions and industries.

● Research paper/Reports Published: 11 publications

Names of Senior Researchers

- Dr. NAGIN SHAH
- Dr. R. S. BAICHAWAL
- Dr. SHANKARDAS

ENVIRONMENTAL PROTECTION RESEARCH FOUNDATION

Address:

"Arundhati", Near M.S.E.B.,
Vishrambag, Sangli-416 415.

Background

Status of the SIRO

: Institution.

Year of establishment

: 1982

Major objectives

- : (i) To undertake and study problems in Environmental quality control with emphasis on pollution detection and control.
- (ii) To undertake surveys, data collection, sampling, testing and to interpret the results and to publish the same for the benefit of the society as a whole.
- (iii) To undertake and conduct seminars, exhibitions and training camps relating to Environmental problems.
- (iv) To create public awareness about the protection of Environmental quality.
- (v) To assist Governmental Agencies, Local Bodies and Industries in solving the problem related to Environmental Pollution.
- (vi) To conduct and organize rural water supply and sanitation programmes and to develop appropriate technology, public education and awareness towards public health aspects.

Major research areas

: Environmental Science and Engineering

Initial recognition by DSIR

: 1984

Income and R & D expenditure

		(Rs. in lakhs)		
Income	1992-93	1993-94	1994-95	
Donations received	0.01	0.12	0.005	
Grants received	1.47	0.50	Nil	
Other income (other receipts & int. on corpus fund)	0.96	1.95	1.34	
Expenditure on R&D				
• Capital	0.33	Nil	2.72	
• Recurring	1.00	1.74	2.55	

Infrastructural facilities

Land & Building : 720 Sq. ft. on rent basis 1200 Sq ft. own bldg.
(Approx. Cost Rs. 3,50,000/-)

Equipment facilities : Gross value : Rs. 5.00 lakhs.

List of sophisticated equipment :

- (i) Spectrophotometer (ii) Flame Photometer, (iii) Warburg Apparatus
- (iv) Electro dialysis, (v) Computer PC-At, with 24 pin printer.

R & D Manpower

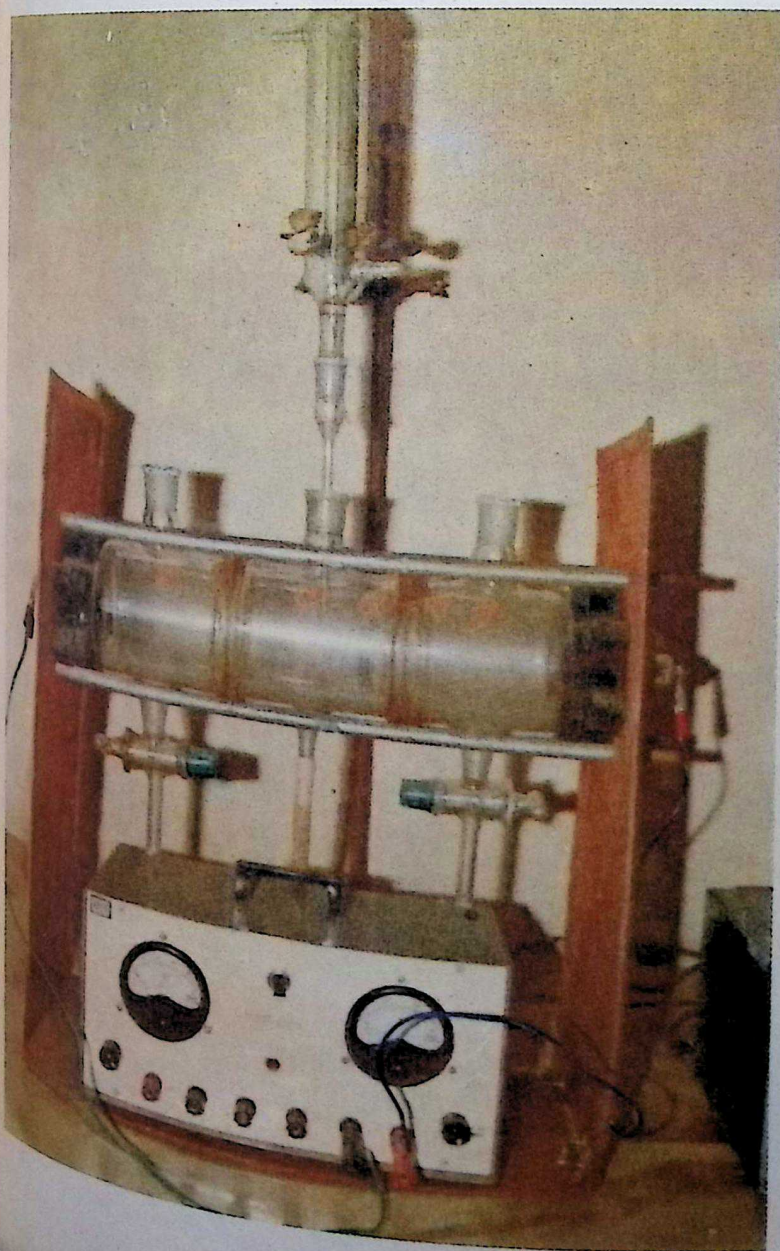
	Qualifications	Full time
Scientific & Technical :	Doctorates/Post Graduates/ Graduates	8
Social Sciences & others		4
Library facilities	: Includes text books and reference books, national and international journals, research papers etc. in the field of Environment.	

Major achievements claimed

- New techniques/methodologies : Spentwash composting. developed and implemented
- Research papers/Reports published : More than 20
- Seminars/Conferences attended/ : Attended More than 50 organised seminors/workshops/ get to gethers Organised, 44

Name and Designation of Senior Researchers

- Dr. B. Subba Rao, President
- Dr. S. V. Ranade, Vice-president
- Prof. J.M. Gadgil, Managing Secretary.
- Prof. Y.V. Huprikar, Research advisor
- Dr. S.D. Khambe, Chief Development Officer.



Electro dialysis apparatus for Fulvic Acid
& Humic Acid Analysis.

ENVIRONMENTAL RESOURCES RESEARCH CENTRE

Address:

Pumalliyoorkonam
P.B. 1230, Peroorkada,
Thiruvananthapuram-695 005

Background

Status of the SIRO

: Research Institute registered under the charitable societies act

Major objectives

- : (i) To interact/collaborate with Universities and Institutions in India and abroad for promoting environmental resources research both basic and applied with the aim of conservation, preservation, utilization, introduction of plants and animals in order to provide research and technology back-up for industries, ecodevelopment, wasteland greening, generation of wealth from waste and weeds among a spectrum of pursuits which are beneficial to the society.
- (ii) To offer consultancy and other services to Government and other organisations in policy making and development programmes.
- (iii) To provide higher education leading to M.Phil and doctorate (Ph.D) degrees, and to organise short term course and training in relevant areas such as taxonomy, biological resources, environmental management, public utility services, ecodevelopment, plant introduction, conservation of plant and animal genetic resources and their improvement etc. in order to promote dissemination of basic knowledge and generation of self employment opportunities.

Income and R & D expenditure

	1992-93	1993-94	(Rs. in lakhs) 1994-95
<i>Income</i>			
Donations Received	Nil	Nil	11.5
Grants received	15.70	16.93	0.2
Other income	1.26	0.15	
<i>Expenditure on R & D</i>			5.5
• Capital	2.46	5.37	11.5
• Recurring	15.17	16.27	

Infrastructural facilities

Land & Building : Rented
Equipment Facilities : Gross Value : Rs. 8.21 lakhs.

List of Sophisticated equipment :

- Spectroplatometer,
- Binocular
- Microscope
- Microtome, etc.

R & D Manpower

	Qualification	Full time
Scientific & Technical	Doctorates/	3
	Post Graduate	5
Technical (subordinated)		5
Social Sciences	Post Graduate	2
Others (administration)		9

Library facilities : 2000 books, 3000 reprints 20 journals, other accessions-300

Major achievements claimed

The research and development studies have been inter-disciplinary involving resources collections and cataloguing germplasm development, improvement and ecosystems management. The salient achievements are as follows:

Plant Resources Studies

- (i) *Mulberry (Morus spp.)*: Under a project sponsored by the Central Silk Board, a holistic approach to classification has been evolved combining both visual, microscopic, chemical and biochemical parameters.
- (ii) *Rice Plant (Oryza sativa)*: Among 21 species of rice only 2 varieties viz. *O. sativa* and *O. glaberrima* are cultivated, but a knowledge of the wild varieties is important for plant improvement through breeding for disease resistance. The taxonomy of the genus is still unsettled in view of which the morphological parameters of pollen and husk were considered. It has been noted that *O. officianalis* is perhaps the most primitive among the rice taxa and that a species like *O. malampuzhensis* and *O. inandamanica* are only ecological variants of *O. officianalis*.
- (iii) *Ornamentals*: The tropics hold the wealth of plant biodiversity and in order to and domesticate plants of ornamental interest under a project supported by the ICAR a large number of wild species *Orchids*, *Aroids*, *Begunias* etc. has been collected from the western ghats of Kerala and are being domesticated for commercial exploitation.

Paleoenvironmental Studies:

Under a project sponsored by ONGC, standards were evolved for paleoenvironmental interpretations from data of pollen and Dinoflagellates from ocean sediments. The occurrence of the pollen of *Alnus*, *Borassus* in the marine sediments, was evidence of their long distance transport.

Ecosystem Studies

An inventory of the environmental resources of the Super Thermal Power Station estate in Ennore, Tamil Nadu with funding support from Asian Development Bank has been prepared, from which recommendations for environmental management including

conservation strategies have been proposed. Natural Conservation areas for preserving the rare species of plants have been established at the site.

Pollution Studies

An experimental investigation on the effect of SO_2 on coconut is in progress as a research back up to the proposed Thermal Power Station at Kayamkulam, Kerala. A fumigation system has been fabricated and the preliminary results showed a reduction in foliar pigments and further the cell sap pH showed slight acidification with SO_2 treatment.

Policy Studies

A pricing and marketing study of agro-industries relating to rubber, coconut, cashew and papper has been undertaken under a project sponsored by NABARD and various types of marketing channels have been identified.

Developmental Programmes

- (i) The ERRC adopted the village Kodukulanji for development.
- (ii) An EIA on the impact of the small hydro electric stations at Aliyar Dam on the Indira Gandhi National Park in Anamalai Hills has been made in which a few rare species like *Oryza granulata* and wild species of tephrosia has been reported.
- (iii) Technical support given to MMJ Resorts & Holding in preparing an inventory of environmental resources as a back up to the development of a highland bio-park at Gudampura near Munnar in Kerala.
- (iv) Ecodevelopment of some educational campuses have been carried out, for imparting field education in biodiversity and conservation management.

Infrastructural facilities

A herbarium with over 1000 plants have been developed. A library with over 5000 accessions have been organised. A skeletal laboratory, a green house and other field support have been developed.

Other activities

Large number of academic meeting including seminars, symposia and workshops has been conducted. Further, the ERRC staff participated in National Seminars & Symposia and also offered training and advice to a variety of institutions. The Centre offered the prestigious Charles Darwin International Award for Science and Environment, the first of which was given to Dr. M.S. Swaminathan F.R.S. The Centre publishes the "Journal of Environmental Resources". The centre has published 12 Research Papers/Repors & attended/organised 6 conferences/seminars.

Name and Designation of five Researchers

- Dr. P.K.K. Nair, Emeritus Scientist (CSIR)
- Dr. M.P. Nayar (Pitambar Pant Fellow)
- Dr. (Mrs.) Susan Abraham, Emeritus Professor STEC
- Dr. N.P. Jayasankar, Emeritus Fellow, INSA
- Prof. P.M. Mathew (Visiting Professor)

FLUID CONTROL RESEARCH INSTITUTE

Address:
Fluid Control Research Institute
Kanjikode West, Palakkad,
Kerala.

Background

Status of the SIRO : Autonomous R&D Institution under Ministry of Industry.

Year of establishment : 1989

Major objectives : (i) Sponsored projects;
(ii) Prototype development;
(iii) Consultancy;
(iv) Testing/Calibration;
(v) Industrial Training;
(vi) Technology Transfer.

Major research areas : Fluid Power, Fluid Flow Control and Measurement.

Initial recognition by DSIR : March, 1990

Income and R & D expenditure:

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
Income			
Donations received	Nil	Nil	Nil
Grants received	150.00	160.00	160.00
Other income	32.48	51.40	77.20
Expenditure on R & D			
● Capital	60.23	111.82	79.56
● Recurring	72.51	80.46	82.94

Infrastructural facilities

Land & Building : Area : 25 acres:
Value : Rs 90.49 Lakhs

Equipment Facilities : Gross Value : Rs. 702.06 Lakhs

List of sophisticated equipment

Water Flow Lab. : (1) Pipes upto 600 mm MS/SS
(i) Pumps (i) 2 Nos. of 160 KW (HP) 10 bar 450m³/hr.
(ii) 2 Nos. of 110 KW(HP) 3 bar 900 m³/hr.
(iii) Filter 600 mm 1800 m³/hr. capacity 20 micron
(iv) Flow diverter, overhead tank, Data Acquisition System

Air Flow Lab : Pipes upto 400 mm MS/SS. (2) Blower 150 KW, Lab 10,000 M³/hr. (3) Bell Prover 500 litre. (4) Sonic Nozzles. (5) Wet Gas Meter. (6) Automatic

Calibrator 'MKS' make. (7) Data Acquisition System.

Oil Flow Lab. : (i) Pumps 10 bar/600 m³/hr./80KW
(ii) Pipes 300 mm MS 3.
(iii) Filter 600 m³/hr. (20 Micron)

- R & D Manpower : Full time
- Scientific & Technical : 50
- Admn. and others : 30
- Library facilities : 4000 books, 1800 Copies, 50 periodicals, Scientific search data & others.

Major achievements claimed

- Technologies developed and ready for upscaling:
 - (i) Hydraulic Actuator (Models FHA 500, FHA 1000, FHA 1500, FHA 3000, FHA 6000).
 - (ii) Two wire capacitance type position transmitter
 - (iii) Pulse to DC converter
 - (iv) Fluid jet anemometer for low velocity flow measurements.
 - (v) Vortex flowmeter
 - (vi) 'S' type probes averaging pitot tube, cone flow meter.
- Patents Filed : 7
- Research papers/reports published: 5
- Seminars/Conferences attended/organised:
 - (i) Annual conference of M/s. Instruments Society of America, India Region, Dec. 1994.
 - (ii) Interaction meeting on "Consultancy capabilities of the state of Kerala" by M/s. Kerala Industrial and Technical Consultancy Organisation Ltd., August 1994.

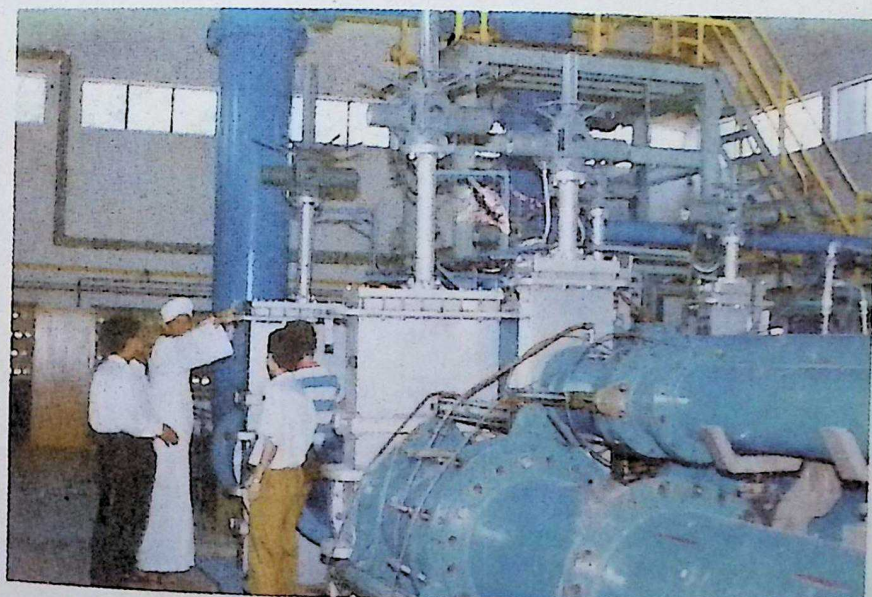


FCRI — Oil Flow Laboratory

- (iii) 20th National Conference of Fluid Mechanics and Fluid Power (FMFP), Dec. 93 at FCRI.
- (iv) Regular Bimonthly courses
- (v) Gas flow measurement at Gas Authority of India Ltd., Vijaipur.
- (vi) Specialised training for Instrumentation Engineer in Instrumentation and Control in flow measurement for ONGC at FCRI.
- (vii) Training programme for foreign nationals under ITEC & SCAAP programmes of Govt. of India & one specialised training programme.

Names of Senior Researchers:

- Mr. M.S. Konnur
- Dr. K. Balakrishnan
- Dr. R.S. Madhusudan
- Mr. M. Viswanathan



FCRI — Water Flow Laboratory

FOUNDATION FOR COIL WINDING TECHNOLOGY AND RESEARCH

Address:

Plot No. C-5-12 (19), MIDC,
Bhosari,
Pune-411 026

Background

Status of the SIRO : Association
Major objectives : Advancement of Coil Winding Technology
Initial recognition by DSIR : May, 1988.

Income and R & D expenditure

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donation received	9.42	10.74	12.82
Grants received	Nil	Nil	Nil
Other income	Nil	Nil	Nil
<i>Expenditure on R & D</i>			
• Capital	Nil	Nil	Nil
• Recurring	9.42	10.74	12.82

Infrastructural facilities

Land & Building : Area : Using hired facility Area 400 sq.ft
Equipment facilities : Gross value : Leased facility from PADMCO

List of sophisticated equipment (List of Leased Facility)

- (1) Table Drilling M/c, Shearing M/c, Sheet Bending M/c, Bench Grinding M/c, Hand Drilling M/c, Flexible Shaft Grinder, Bulling M/c, Arc Welding M/c, Lahe M/c, Drying Oven, Curing Furnace, Hand Press, winding M/c.
- (2) Oscilloscope, Microprocesser kits (8031.8085) Programmer, UV Eraser, DMM Frequency Generator & Frequency Counter.

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical	Doctorates	1	—

Library facilities : Good library facility available.

Major achievements claimed

- Technologies developed and : (i) Transformer Protection transferred for upscaling/
commercialisation : (ii) Reverse wound type stepper : (iii) Precision wire motor
(iv) Tersioner

Names of five Senior Researchers

- Dr. Madhu Patel
- Dr. S. D. Bhide
- Dr. S. K. Katti
- Mr. V. M. Joshi
- Dr. S. A. Khaparde

FOUNDATION FOR INNOVATION AND TECHNOLOGY TRANSFER

Address:
Indian Institute of Technology,
Hauz Khas, New Delhi-110 016.

Background

Status of the SIRO : Institution (An autonomous technology development interface closely linked to IIT Delhi and registered as a Society under the Societies Registration Act of 1860.

Year of establishment : 1992

Major objectives : To foster, promote and sustain the cultivation of Science and Technology and scientific research in all the aspects — pure, applied and educational and to engage in result oriented industrial R&D both at industrial premises and at IIT Delhi. In all its endeavour, FITT is to draw upon the intellectual expertise and infrastructural facilities of IIT Delhi. As an interface organisation, FITT is aimed to enhance the industry-institute interaction in areas of industrial research/problem solving consultancy/ technology development and transfer.

Major research areas :

- i) Atmosphere Science and Environment Management
- ii) Bio-technology
- iii) Renewable Energy Applications
- iv) Laser Applications
- v) Microelectronics
- vi) Microprocessor Applications
- vii) Computer Aided Design & Manufacturing
- viii) Computer Networking and Communication
- ix) Parallel Computing Technology

- x) Optical Fibre Communication
- xi) Signal Processing
- xii) Polymer Science and Plastics
- xiii) Textile Engineering and Chemistry
- xiv) Industrial Tribology and Maintenance Engineering
- xv) Power System Engineering
- xvi) Total Quality Management

Initial recognition by DSIR : June, 1994

Income and R & D expenditure:

	<i>(Rs. in lakhs)</i>		
<i>Income</i>	<i>1992-93</i>	<i>1993-94</i>	<i>1994-95</i>
Donations received	Nil	Nil	Nil
Grants received	112.0	50.0	.
Other income	45.35	61.77	61.24
<i>Expenditure on R & D</i>			
● Capital	1.02	11.44	19.91
● Recurring	5.27	14.15	44.97

*Grant-in-aid received from the Ministry of Human Resource Development and held in a corpus fund.

Infrastructural facilities:

- Land & Building : FITT is to draw upon the infrastructural facilities of IIT with minimum investment of its own on land and building.
- Equipment facilities : In all research projects, consultancies and such other activities leading to the development of technology, adoption/adaptation/upgradation of technology, FITT is to draw upon primarily the facilities of IITD including equipment in the laboratories.

R & D Manpower

- : Drawn from the 558 faculty members, scientists and design engineers of IIT Delhi on a case to case basis depending on the activity handled.

Library facilities

- : Draws upon the Central Library of IIT Delhi which has a collection of 2,72,901 volumes comprising 1,62,310 books, 68,384 bound volume of journals, 26,922 standards, 1,095 pamphlets, 13,304 technical reports, 2,172 theses and 2,281 microfilms/microfiche. The collection covers all disciplines of science and engineering, technology humanities, social sciences and subscribes to 1006 journals on various disciplines.

Major achievements claimed:

- Technologies developed and transferred for commercialisation

- : (i) Fibre Optics Educational Kit designed at the Fibre Optics Groups of IIT Delhi.
- (ii) Micro-electronic Educational Kit designed at the Centre for Applied Research in Electronics.

- Technologies developed and ready for upscaling

- : Microprocessor based laboratory model of Flexible AC Transmission System (FACTS)

- New Techniques/methodologies developed and implemented

- : CELP based speech compression algorithm for digital answering machine and other application.

- Reports published

- : 2

- Seminars/Conference organised

- : 16 workshops/seminars/training programmes were organised during 1994-95. Notable amongst them are:
- (i) Fibre Optics Components and Sensors
- (ii) Modelling and Monitoring of Coastal Marine Pollution (UNESCO sponsored)
- (iii) The Application of microbial biotechnology (UNESCO sponsored)
- (iv) Managing In-house Industrial R&D
- (v) Industry-Institute Meet

- (vi) Engineering Failure Problems and Preventive Measures.
- (vii) Modern Information Access Facilities
- (viii) Tribology and Maintenance
- (ix) Recent Advances in Fault tolerant and Fail-Safe Techniques.

Name and Designation of five Senior Researchers *

- Dr. C. M. Bhatia, Prof., Electrical Engineering Deptt. IIT D
- Dr. S. Prasad, Prof., Electrical Engineering Deptt. IIT D
- Dr. A. K. Ghatak, Prof., Deptt. of Physics, IIT Delhi
- Dr. A. B. Bhattacharya, Prof., Centre for Applied Research in Electronics, IIT Delhi
- Dr. S. P. Sabherwal, Prof., Centre for Energy Studies, IIT Delhi

GOVERNMENT TOOL ROOM & TRAINING CENTRE

Address:
Rajajinagar Industrial Estate,
Bangalore-560 044.

Background

Status of the SIRO : Society registered under Karnataka Societies Registration Act, 1960.

Year of establishment : 1972

Major objectives : (i) Design & Development of tooling for modern industries,
(ii) Training at all levels in the field of tool engineering.
(iii) Technological upgradation of small scale sector,
(iv) Research & Development in tooling and machining related areas.

Major research areas: (i) Design, analysis and development of advanced moulding, die casting and presstools.
(ii) Development of new machining techniques using CAD/CAM facilities.
(iii) Product & process development involving metal cutting, metal forming, polymer processing and die casting.
(iv) Software development for machining and tooling as well as for training.
(v) Development of components and prototypes.

Initial recognition : 1976

Income and R & D expenditure

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
<i>Income</i>			
Donation received		21.00	8.60
Grants received*	816.85	213.00	499.62
Other income (R&D activities, process & tooling development & Miscellaneous)	282.04	284.10	392.20
<i>Expenditure on R&D</i>			
• Capital	89.97	57.10	98.98
• Recurring	122.64	139.69	148.80

(*including Danish aid for establishment of Mysore Sub-centre.)

Infrastructural facilities

Land & Building : Area : Land : 6000 Sq. mtrs.
Area : Building : 4000 Sq. mtrs. appx.
Equipment facilities : Gross value : Rs. 1538 lakhs

List of sophisticated equipment:

- Computer workstations with design & analysis software,
- CNC Machining centres,
- CNC Milling & turning centres,
- 3D Coordinate Measuring machine,
- Tool Tryout machines,
- Electronic Test Equipment
- Metrology & Inspection devices.

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical (excluding technicians)	Doctorates	1	
	Post Graduates	1	
	Grad. Engineers	12	

Library facilities: Library facilities with about 500 advanced technical books is available. Additional books to the extent of Rs. 6 lakhs is being acquired with Danish assistance.

Major achievements claimed

- Technologies developed and transferred upscaling/commercialisation:
 - (i) Cages for prosthetic heart valves developed and technology transferred for batch production to our Mysore Centre.
 - (ii) Non-return valves and engine filters developed for Light Combat Aircraft under assignment from Aeronautical Development Establishment.
- New Techniques/methodologies developed and implemented
 - (i) Development of wind profile blades for Light Combat Aircraft.
 - (ii) Under an R&D programme of Indian Institute of Science, Bangalore, a prototype of air assisted injection system for two stroke spark ignition engine was made and is undergoing trials at IISE.
- Research papers/Reports published : 2
- Award won:
 - Award for technical excellence from the Society of Indian Aerospace Technologies and Industries (SIATI award) for indigenisation of aerospace components.
 - Mention in ISRO Newsletter for developing prototype of very high resolution radiometer for INSAT-2.

Name and Designation of five Senior Researchers

- Dr. A. Parthasarathy, Director
- Shri M. Nagaraju, Gen. Manager (TP)
- Shri K.V. Madhusudhan, Gen. Manager (Projects)
- Shri S. Chandrashekar, Dy. Manager
- Shri R.R. Vaidya, Dy. Manager

GSFC SCIENCE FOUNDATION

Address:
GSFC Research Centre,
PO: Fertilizernagar 391 750,
Distt: Baroda, Gujarat.

Background

Status of the SIRO	:	Institution
Year of establishment	:	1991
Major objectives	:	To promote scientific research leading to innovative accomplishments in benefit of people.
Major research areas	:	Water, Environment, Agri-biotechnology, Materials Sciences Energy.
Initial recognition by DSIR	:	1993

Income and R & D expenditure:

	Rs. in lakhs		
Income	1992-93	1993-94	1994-95
Donations received	Nil	Nil	Nil
Grants received	Nil	Nil	Nil
Other income (interest of FDs and SB A/C)	98.41	81.11	108.24
Expenditure on R&D			
● Capital	Nil	Nil	Nil
● Recurring	0.37	34.27	101.0

Infrastructural facilities :

Land & Building : At present, the Foundation is using building of GSFC for office purpose. The Foundation has acquired about 18 acres of Kotar land for development of modern agricultural processes and practices.

Equipment facilities : Gross value: Rs. 25 lakhs

List of sophisticated equipment:

- High Performance Liquid Chromatography system
- Gas Chromatography system
- Analytical micro-balance

R&D Manpower:

	Qualification(s)	Full time	Part time
Scientific & Technical	Doctorate & Post Graduates	4*	2
Social Sciences and others	Graduates	1	1*

*Under recruitment

Library facilities : Inter-library facilities with Dialogue access available

Major achievements claimed:

- *Technology developed and ready for upscaling:*
Process know-how developed for selected derivatives of Castor oil in collaboration with Indian Institute of Chemical Technology, Hyderabad.
- *New Technologies/Methodologies developed and implemented:*
Micropropagation of selected ornamental and medicinal plant is under progress.

- **Seminars/Conferences attended/organised:**
Attended a workshop on "Drinking Water Problems in Rural Gujarat Issues and Perspectives" organised by Gujarat Institute of Development Research, Gota (Ahmedabad)
- **Research Paper:**
Presented a paper "Technology Mission for Gujarat" at the workshop organised by Shramik Vikas Santhan, Baroda, December 1994.

Name and Designation of five Senior Researchers:

- Dr. M H Mehta, Member Secretary
- Dr. A M Dave, Co-ordinator
- Dr. S B Kute, Project Investigator
- Dr. K A Patel, Project Investigator
- Dr. K J Mehta, Project Co-investigator

GUJARAT ENERGY DEVELOPMENT AGENCY

Address:
2nd Floor, Suraj, Plaza-II,
Sayajigunj,
Vadodara - 390 005.

Background

Status of the SIRO

: Gujarat Energy Development Agency (GEDA), was established in 1979 with its head-quarters in Vadodara. GEDA is registered under the Registration of Societies Act, 1860.

Major objectives

: GEDA was established to promote and popularise renewable energy technologies and energy conservation measures, undertake R & D in this area and help the state in formulating energy policies. Major research area are Solar energy, Wind Energy, Biomass Gasification, Biomethanation, Energy Plantation, and Energy Conservation. Date of initial recognition by DSIR is 8.2.1991.

Income & R & D expenditure

		(Rs. in lakhs)	
	1992-93	1993-94	1994-95
<i>Income</i>			
Donation Received	Nil	Nil	Nil
Grants Received	687.47	575.26	550.00
Other Income	Nil	Nil	Nil
<i>Expenditure on R & D</i>			
• Capital	Nil	Nil	Nil
• Recurring	524.83	499.81	550.00

Infrastructural facilities:

Land & Building : Area 14,000 sq.m.
Value: Rs. 246 lakhs

Equipment facilities: : Gross value : Rs. 350 Lakhs.

List of sophisticated equipment :

Continuous recording temperature and density meter (with recorder)
Temperature profile measurement equipment
Pyranometers
DC regulated power supplies
Cup-Counter Anemometers
Continuous recording Anemograph.

R & D Manpower:

	Qualification	Full time
Scientific & Technical	Applied and Engg. Science	32
Social Science and others	—	38

Major achievements claimed :

- Technologies developed and transferred for upscaling/Commercialisation.
 - Design of solar driers to suit specific applications in chemical industries, agriculture and pharmaceutical concerns.
 - ii) Development of biogas plants based on kitchen waste and water hyacinth.
 - iii) Setting up of a salt gradient solar pond for process heat.
 - iv) Development of box type Solar Cooker.
 - v) Development of high rate anaerobic filter reactor for methane recovery from industrial organic effluents.
 - vi) Grid connected windfarm technology.
- Technology developed and ready for upscaling:
 - i) Modification in FRP (improved) bullock cart making it more energy efficient.
 - ii) Solar Photovoltaic lighting systems
- Research Papers/reports published:

7
- Seminars/Conferences attended/organised:
 - i) Exhibition on Renewable Energy Devices India International Trade Fair at New Delhi during Nov. 14-23, 1993
 - ii) Exhibition of Renewable Energy Devices at at GBPL Urja Research Foundation at Bombay during Nov. 14-23, 1993.
 - iii) Energy Camps for children—3 days Workshop, total 7 camps were organised.
 - iv) Teacher's Awareness Programme on Energy Education during July 3 to Aug. 1, 1993 at Rural Development Society, Panelav, District Panchmahals, Gujarat.
 - v) National Solar Energy Convention 1993 at Vadodara during Dec 11-13, 1993. The theme was—Role of Renewable Energy in Energy Policy
 - vi) Training programme for Women Extension Workers on Renewable Energy during Sept. 20-25, 1993.
 - vii) Village Awareness Programme at Village Amrol on Jan. 8, 1994. GED organised Solar Cooker & Improved Chulla demonstration, exhibition

Renewable Energy, film show, quiz competition for children.

viii) Two days training programme on Energy Conservation Policy & Energy Environment Issues during Feb. 21-22, 1994 at Vadodara.

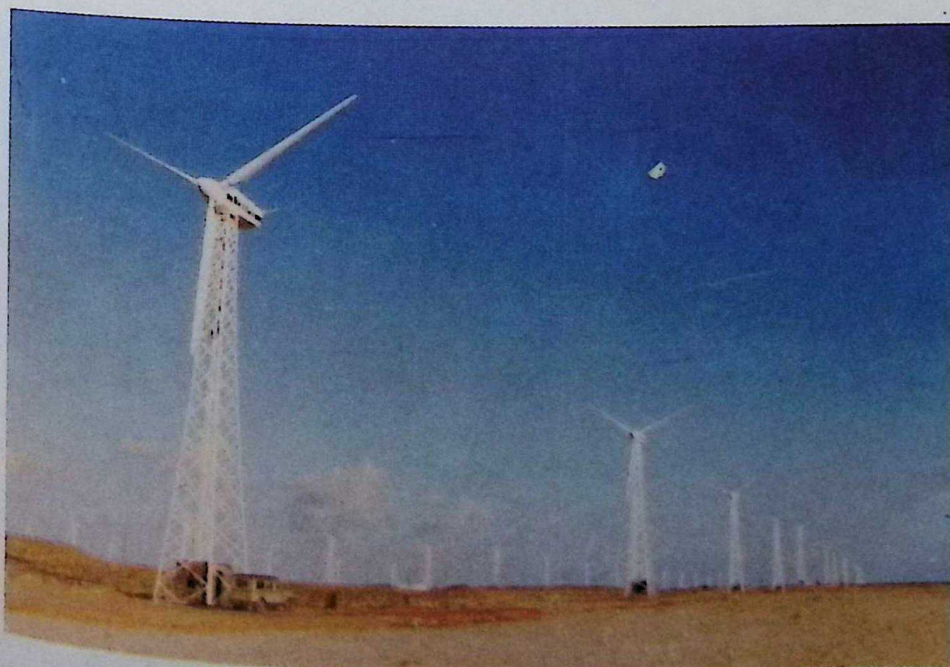
ix) One day Seminar for Senior Officers from Defence Services, New Delhi organised at Vadodara on March 2, 1994.

Name and Designation of five Senior Researchers:

- Dr. M.M. Pandey, Director-in-charge
- Sh. K.V. Doshi, Dy. Dir (Development)
- Sh. B.J. Malaviya, Dy. Dir (Techno-Commercial)
- Sh. S.B. Patil, Asst. Director
- Sh. R.K. Patel, Asstt. Director



Salt Gradient Solar pond for Process Heat



Grid connected Windfarm Technology

GUJAR MAL MODI SCIENCE FOUNDATION

Address:

8th Floor, Eros Apartments,
56, Nehru Place,
New Delhi-110019.

Background

G.M. Modi Science Foundations was set up in 1974 and is Registered on association under the Societies Registration Act, 1960 was approved by Department of science and Technology as well as Ministry of Agriculture and Rural Development under section 35 (i) (ii) of the Income Tax Act, 1961.

Major objectives

: Main theme of the foundation is "promotion and development of science and technology" in the service of nation and fellow countrymen.

Major research areas

: Scientific research in fields related to industry (Textile industry) include:

- (i) improvement of Rawmaterial (Cotton) and process to make the endproduct not only competitive but cost effect.
- (ii) To minimise environmental pollution and hazards.
- (iii) Pilot studies for adoption and application of Research findings in industrial productions.
- (iv) To disseminate scientific findings and new ideas thru active participation in national seminars, scientific meetings, conferences, workshop; lab to lab programme and publishing the complete information which can help the fellow countrymen especially the farmers increase cotton production/productivity.

Income and R & D expenditure

	1992-93	1993-94	(Rs. in lakhs) 1994-95
<i>Income</i>			
Donations Received	Nil	Nil	
Grants received	Nil	Nil	
Other income	Nil	Nil	
<i>Expenditure on R & D</i>			
• Capital	—	—	
• Recurring	3.36	3.79	(App)

Infrastructural facilities

Land & Building

: Area : Value : Rs. 3.51 Lakhs

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical	Doctorates	1	1
Library facilities	: Foundation makes use of Library facilities belonging to Modi spinning/weaving mills & Modi threads Ltd.		

Major achievements claimed:

- Technologies developed and transferred for upscaling/commercialisation.
 - a) Vaccum cleaner cloth for air filtration.
 - b) Core spun yarn
 - c) Production of DRF Yarn on rings frames.
- Technologies developed and ready for upscaling:
 - High strength swing thread/yarn production.
- New techniques/mathodologies developed and implemented.
 - Neutralisation of Alkanine effluent by flue gas.
- Research Papers/Reports Published : 3
- Seminars/Conference Attended : 2
- Organised

Name and Designation of Researcher:

- Dr. V.M. Sahni, Chief Research Scientist

GULBARGA UNIVERSITY

Address:

Gulbarga University,
Gulbarga, 585 106.

Background

University Interdisciplinary Centre

Income and R&D expenditure:

	1992-93	1993-94	(Rs. in lakhs)
Income			1994-95
Donations Received:	Nil	Nil	Nil
Grants received lakhs:	10.0	15.0	15.0
Other income:	Nil	Nil	Nil
<i>Expenditure on R&D:</i>	10.0	15.0	15.0
● Capital:	10.0	15.0	15.0
● Recurring:	—	—	1.0

Infrastructural facilities:

Land & Building	:	Value : Rs. 60 lakhs.
Equipment facilities	:	Gross value: Rs. 35 lakhs

List of sophisticated equipment:

- Elisa Reader
- Liquid scintillation counter.
- Electro phoresis Equipment
- Fraction collector.
- UV. Spectrophotometer.

R&D Manpower:

	Qualification	Full time	Part time
Scientific & Technical:	Doctorate/ Post Graduate	1	03

Library facilities : CDROM/Inflinet/Nicnet etc.

Major achievements claimed:

- *Technologies developed and transferred for upscaling commercialisation:*
Micropropagation of banana & Sugarcane
- *Technologies developed and ready for upscaling:*
Micropropagation of grapes & horticulture crops.
- *New Techniques/methodologies developed and implemented:*
Cell selection technology for stress resistant Sugarcane somaclones.
- *Research papers/Reports published:*
Papers: 40
Reports: 3
- *Seminars/Conference attended/organised:* 2
- *Awards won:*
DSTA Awards: 2
- *Any other:*
KAAS award: 1

Name and Designation of Senior Researcher:

Prof. G.R. Naik, Co-ordinator.

HARI SHANKAR SINGHANIA ELASTOMER AND TYRE RESEARCH INSTITUTE (HASETRI)

Address:
Po. Tyre Factory, Kankroli,
Dt. Rajsamand,
Rajasthan-313 342.

Background

: HASETRI was established & promulgated by J.K. Ind. Ltd. in 1st October 1992 and is engaged in Research & Development activities in Polymers and Automotive Tyres & related field.

Income and R & D expenditure

Income	Oct. 1992-March 1994	(Rs. in lakhs)
		1994-95
Donations Received	150.00	
Grants Received	Nil	Nil
Other income	13.36	14.27
Expenditure on R&D		
• Capital	43.17	21.03
• Recurring	34.34	48.42

Infrastructural facilities

Land : Land : 4000 Sq. mtrs.
Building : 1500 Sq. mtrs.

Equipment facilities : Provided by J.K. Ind. Ltd.: Rs. 299.15 lakhs
Procured by HASETRI : Rs. 69.90 lakhs

List of sophisticated equipment :

- Stereo Zoom Optical Microscope,
- Mooving Die Rheometer 2000E
- Mooney Viscometer 2000E
- High Performance Liquid Chromatography (HPCL) with Gel Permeation Chromatography (GPC)

R & D Manpower

	Qualification	Full time
Scientific & Technical	Graduate/Postgraduate/ Doctorates	20
Others	Graduate/Postgraduate	3

Library facilities : A full fledged library facility for assiting research & development activities exist. Beside this, this Institute is a member of Innovation & Technology Transfer (FITT), IIT Delhi and Indian National Scientific Documentation Centre (INSDOC), Delhi.

Major achievement claimed

- Technologies developed and transferred for upscaling/commercialisation
 - (i) Water based innerlube for green tyre.
 - (ii) Industrial Cleaner & Water based paint at T.U.A.
 - (iii) Developed different tyre compounds in order to reduce cost, enhancement of quality & service life.
- Technologies developed and ready for upscaling :
 - (i) Anti rust paint.
 - (ii) Modification & Development of different tyre compounds as per the need of Indian automotive tyre industry.

- New Techniques/methodologies developed and implemented
 - (i) Developed test method for qualitative & quantitative estimation & identification of materials.
 - (ii) Dynamic adhesion test method for Cord - Rubber composite.
- Patents Field : 2
- Research Papers/Reports Published : 8 papers published
- Seminars/Conferences attended/organised
 - (i) 9 scientist/engineers attended 10 National/International conferences.
 - (ii) Conducting lectures on polymer for IRI Rajasthan branch member & MS University, Udaipur students.
 - (iii) Also conducting training programme on ISO 9000 for J.K. Ind. employee

Name and designation of five Senior Researchers

- Dr. R. Mukhopadhyay, Director - Research
- Mr. A.K. Chandra, Scientist E
- Dr. A.S. Deuri, Scientist D
- Mr. P.P. Chattaraj, Scientist D
- Mr. A. Adhikary, Scientist C

HYDERABAD SCIENCE SOCIETY

Address:
12-2-460 Mehdiapatnam
Hyderabad 500 028 A.P. India

Background

Status of the SIRO	: Association
Year of establishment	: 1948
Major objectives	: Promotion of Science & Technology through Training Courses, R&D Projects & Publications.
Major research areas	: Electronics, Robotics, Sensor Technology.
Initial recognition	: June 1979.

Income and R & D expenditure

	(Rs. in lakhs)		
Income	1992-93	1993-94	1994-95
Donations received :	Nil	Nil	Nil
Grants Received & E/F :	2.48	1.82	—
Other income :	0.40	—	0.80
<i>Expenditure on R & D :</i>			
• Capital :	0.06	0.07	—
• Recurring :	2.76	1.53	1.08

Infrastructural facilities

Land and Building	: Building allotted by the State Government of Andhra Pradesh.
Equipment facilities	: Gross Value: Rs. 20 lakhs

List of sophisticated equipments

Electronics Test & Measuring equipment including H.F. & Storage Scopes.
Computer set
Nuclear Radiation Spectrometers & Counters.
Video Recording & Editing equipment.

R&D Manpower

	Qualification	Full time	Part time
Scientific & Technical (Applied & engineering Sciences)	Doctorate/ Postgraduate/ Graduate	8	4

Library facilities:

Having standard reference books, text books and periodicals in electronics, physics, chemistry, mathematics and allied subjects.

Major achievements claimed

- New Techniques/methodologies developed and implemented:
 - i) automatic guided Vehicles.
 - ii) Electronic Guide Stick for Blind.
 - iii) Lab Plasma Polymerization Unit.

- Research papers/Reports Published : 5
- Seminars/Conference attended/ organised : 5
- Awards won : Director awarded Unity Front Silver Jubilee Award for Science & Technology.

Name and Designation of Senior Researchers:

- Mr. S.A. Khan, Director
- Mr. Kiran Chandwalkar, Mechanical Engineer
- Mr. N. Parthasaradhi, Software Engineer
- Mr. B. Gopinath, Research Associate
- Dr. S.G. Sathyanarayanan, Research Associate.



Electronic Guide stick for Visually Handicapped

ICI INDIA RESEARCH & TECHNOLOGY CENTRE (FORMER ALCHEMIE RESEARCH CENTRE)

Address:
Thane Belapur Road,
Thane - 400 601,
Maharashtra.

Background

Status of the SIRO : Association
Year of establishment : 1976
Major objectives :

(i) Develop new products/processes through innovative chemistry and technology.

(ii) Undertake exploratory applied research projects.

Major research areas

- : (i) Synthetic Chemistry
(ii) Analytical Science
(iii) Physical Chemistry & Modelling
(iv) Chemical Engineering

Initial recognition by DSIR : 1978

Income and R & D expenditure:

Income	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
Donations received	216	235	216
Grants received	Nil	Nil	Nil
Other income	—	—	47
Expenditure on R & D			
● Capital:	57	91	67
● Recurring:	162	172	218

Infrastructural facilities:

Land & Building Area

: Research Laboratory —

Area: 26,500 Sq. ft.

Also leasehold land at Vashi, New Bombay and 16 flats to accommodate scientists.

Equipment facilities

: Gross Value : Rs. 350 lakhs.

List of sophisticated equipment

- : ● Gas Chromatograph-Mass Spectra
● Fourier Transform Nuclear Magnetic Resonance Spectrometer
● Scanning Electron Microscope
● Thermal Analysis System
● Fourier Transform Infra Red Spectrometer
● High Performance Liquid Chromatograph
● Gas Chromatograph
● Elemental Analyzer
● Laser Diffraction Particle Size Analyzer
● Atomic absorption Spectrometer

- Haake Viscometer
- PAR Elemental Analyser
- VAX Computer
- Absorption & Fluorescence Spectrometer

R & D Manpower :

	Qualification	Full Time
Scientific & Technical	Doctorates	18
	Post-Graduates	27
	Graduates	4
	Dip. holder	1
Others		16

Library facilities : Subscribes for 40 national and international journals, collection of 2800 scientific and technical books.
Annual spending on library Rs. 15-20 lakhs.

Major achievements claimed:

- Technologies developed and transferred for upscaling/commercialisation:
 - (i) Improved process for Oxyctozanide.
 - (ii) Improved process for BSM accelerator.
 - (iii) Surfactant formulation for dimethoate EC.
 - (iv) NC-based high gloss refinish paint.
 - (v) Rheology modifier for Emulsion Explosives.
- Technologies developed and ready for upscaling:
 - (i) High temperature antioxidant.
 - (ii) Isothiazolinone-based biocide.
 - (iii) Process for extraction of MBT accelerator from waste tar.
 - (iv) More environmentally friendly long delay detonators.
- New techniques/methodologies developed and implemented:
 - (i) Enzyme catalysed surfactant synthesis.
 - (ii) Statistical optimisation of Processes.
 - (iii) Method of undisturbed study of chemical voids in viscous matrices.
 - (iv) Derbal emollients.
- Patents filed : 8
- Research papers/Reports published : 30
- Seminars/Conferences attended/organisation : 86
- Award won : (i) One of the Scientist from our Research Centre viz. Dr. S. Bhadani has been awarded the Shanti Swarup

Bhatnagar Prize 1992 by Government of India.

(ii) Dr. D. Mukesh, A. A. Banerji & Dr. H. S. Bevinakatti have been awarded the Chinnamal Memorial Prize for best technical paper by Indian Institute of Chemical Engineers.

Name and Designation of five Senior Researchers:

● Dr. P. K. Ghosh	General Manager
● Dr. M. M. Mahandru	Senior Scientist
● Dr. S. Bhaduri	Research Associate
● Dr. D. Mukesh	Senior Scientist
● Dr. H. S. Bevinakatti	Senior Scientist

INDIAN ACADEMY OF SCIENCES

Address:

Indian Academy of Sciences,
C.V. Raman Avenue,
Sadashivanagar Post,
Bangalore-560 080.

Background

Status of the SIRO

Major objective

- : The Indian Academy of Sciences was established in 1934 as an Association
- : i) To promote the progress and uphold the cause of Science both in pure and applied branches;
 - ii) To encourage and publish important researches in the branches of science comprehended by the Academy and to represent internationally the scientific work done in India;
 - iii) To publish books, memoirs, journals, proceedings etc. relating to scientific researches;
 - iv) To organise and arrange for the meeting of the congresses, committees and conferences for reading and discussing papers, advising Govt. and other bodies on scientific and other matters.

Details of notifications
u/s 35(1)(ii)/(iii) of Income
Tax Act, 1961

- : The Academy has been recognised as a Scientific Organisation by DSIR for over 50 years.

The present recognition was received in No. 11/107/88-TV-V, dated 28.02.1995 and is valid upto the year 2000. The Income Tax dept. has also been regularly issuing notifications under Sec. 35 (1)(ii) of the I.T. Act, 1961, the latest being No. 1003 (F.No. DG/IT/E/KT-23/35 (1)(ii) 90/IT-E, dated 13.01.1994 upto 31.03.1995.

Income and R & D expenditure

	1992-93	1993-94	(Rs. in lakhs) 1994-95
<i>Income</i>			
Donations received	00.25	0.25	7.8
Grants received (DST)	35.00	52.00	139.7
Other income	25.10	26.25	30.3
<i>Expenditure on R & D</i>			83.8
• Capital	—	21.88	56.7
• Recurring	56.55	58.05	
(Publication and Administration)			

Infrastructural facilities

Land & Building

- : Land Area : 2200 sq. metres
Bldg. Area : 1800 sq. metres
Value : Rs. 112 lakhs

- Equipment facilities : Gross value : Rs. 36.94 Lakhs
- List of sophisticated equipment : • Personal computers with printers etc.
- Fax machine
 - Telex machine
 - Copier/Xerox machine
- Library facilities : A science library is established since 1954

Major achievements claimed

The main activity of the Academy since inception in 1934 has been the publication of scientific journals, for the progress and dissemination of scientific research/knowledge among the scientific communities/Institutions of India. This activity of the Academy has been considered as important as undertaking research as a piece of research not published is as good as not having been carried out. The Academy now publishes ten journals covering all major scientific disciplines. From 1996-1997 two new journals will be published: One of them is devoted to science education to encourage young students to take a career in science. The other is a new journal in chemistry which is expected to be the first international journal for the country and will be published on the most modern lines.

The success of the Academy's publications has been largely due to the maintenance of high standards of editorial practice, good printing and production standards and timely appearance of the journals. The journals are edited by active scientific workers in the field, some of whom are from outside India. The scientific community have come to regard the Academy's publications with a high degree of reputation.

The Academy receives a large number of research papers only half of which are accepted, after intense refereeing, for final publication. The ten journals together bring out over eighty numbers of year, with the total number of printed pages at around 10,000. All the journals are listed in the "Science Citation Index" data base, the world's main repository for science citation information. The journals reach most institutions, universities and colleges in India and many abroad. Thus the Academy has been able to successfully set high standards in publication of scientific journals and is now considered as the leading scientific publisher in India.

Besides its publication activity, the Academy holds discussion meetings, seminars and symposia during each year on important scientific topics and also brings out books and special publications including festschrifts. To coincide with the birth centenary of its founder, C.V. Raman, as well as the diamond jubilee of the "Raman Effect", in 1988, the Academy undertook the massive exercise of bringing out the "Scientific papers of C.V. Raman" in six volumes and a well written biography on him totalling over 5000 printed pages. One of the important activities of the Academy relates to identifying bright scientific talent and honouring them with fellowships and associateships. Such an encouragement has helped them in their scientific pursuits and many of them went on to occupy important scientific positions in the country. The Government of India has recognised the Academy through an endowment known as "Raman Chair" under which distinguished scientists are invited to India to work, lecture and interact with scientists in India. Summer research fellowships are offered to bright students to gain

first-hand research experience in their career. The Academy has also taken up an initiative to study issues affecting science and scientists in the country by appointing expert panels and prepare a document on the subject. One such issue which has been taken up seriously all over the country is the deteriorating standards in university science education in the country. As a follow-up of recommendations made by the panel, several measures have been taken recently to improve the quality of science education.

Name and Designation of five Senior Researchers

- Prof. P. Rama Rao, Secretary, DRDO, Govt. of India
- Prof. R. Narasimha, JNC, Bangalore
- Dr. R. Chidambaram, Chairman, Atomic Energy
- Dr. K. Kasturirangan, Chairman, Space Department
- Prof. G. Padmanaban, Director, IISC, Bangalore

INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE

Background

: Association registered under Societies Act XXI of 1860.

Income and R & D expenditure

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donations Recieved:			
Grants Recieved :			
Govt. of India	409.00	450.00	505.00
Govt. of W. Bengal	79.44	91.83	125.00
Other Income	14.15	13.99	—
<i>Expenditure on R & D</i>			
● Capital (Including Books & Journals)	87.52	109.97	—
● Recurring	30.83	37.38	—

Infrastructural facilities

- Land & Building : Area : 27 Bighas of Land with Building thereon.
Value : Rs. 147.46 lakhs
- Equipment facilities : Gross value : Rs. 561.99 Lakhs
- List of sophisticated equipment :
- Liquid Helium Facility
 - Single Crystal Diffractometer.
 - Liquid Nitrogen Plan
 - Transmission Electron Microscope
 - Varian Spectrometer
 - Thermal Analyser
 - Differential Scanning Calorimeter
 - Par Magnetometer
 - Atomic Absorption Spectrometer
 - EPR Spectrometer
 - Computer System

R & D Manpower:

	Qualification	Full time
Scientific	Doctorates/Post graduates	82
Technical	Post graduates/graduates	134
Library facilities	:	
	i) Books/Journals :	57,546
	ii) Jqurnals/Serials :	297
	iii) Journals/Serials :	180
	iv) No. of Members of Library:	2145
	v) Rendering Reprographic services	

- Patents filed

- : i) Development of highly conducting doped silicon thin films and their application to Amorphous Silicon Solar Cells.
- ii) Fabrication of double junction amorphous silicon solar cells using wide band gap amorphous silicon layers at p/i junction.
- iii) Lowering of optical gap of Amorphous Silicon by Helium dilution.
- iv) Preparation of diamond thin films by Photo Chemical Vapor Deposition.
- v) An effective method improving the intensity of photoluminescence of porous silicon.
- vi) A novel combination of plasma enhanced chemical vapour deposition and heated filament for the deposition of thin solid films.
- vii) Process for preparing Novel Dispersions of Electrically Conducting Polyaniline.
- vii) Process for Preparing Dispersions of Electrically Conducting Colloidal Polyaniline.
- ix) Process for Making Blends of Conducting Polyaniline Nanoparticles and Nonconducting Polymers Leading to Low Percolation Threshold.

- Research papers/ Reports Published

: 625 as

- Seminars/Conferences attended/organised

: 255 Last 3 years.

- Awards won

: 11

- i) Prof. A. Chakravorty of Inorganic Chemistry elected IUPAC Member.
- ii) Prof. K. Nag of Inorganic Chemistry elected Fellow of Indian Academy of Science, Bangalore.
- iii) U.G.C. Career Award received by Dr. S. Goswamy of Inorganic Chemistry.
- iv) Dr. D.S. Roy of Physical Chemistry elected Fellow of Indian Academy of Science, Bangalore.

- v) Dr. B.C. Ranu of Organic Chemistry elected Fellow of Indian Academy of Science, Banaglore.
- vi) MRSI Medal received by Prof. S.P. Sengupta, Materials Science Department.
- vii) Prof. U.R. Ghatak of Organic Chemistry recieved Dr. Swaminathan Birthday Commemoration Award for 1994 awarded by Indian National Science Academy, Delhi.
- viii) Dr. B.C. Ranu of Organic Chemistry elected Fellow of West Bengal Academy of Science & Technology.
- ix) Dr. B.C. Ranu received Prof. N.S. Narasimhan Endowment Lecture Award for 1992-93.
- x) Prof. S.P. Bhattacharyya, Physical Chemistry Department, has been elected a Fellow of the Indian Academy of Science, Bangalore.
- xi) Prof. A. Chakravorty of Inorganic Chemistry Department, has been awarded the Third World Academy of Science Prize in Chemical Sciences.

Any other : Ph.D. (Sc.) Awarded to 19+23+29
= 71 (Last three years)

Name and Designation Senior Researchers

- Prof. A.K. Barua, Head, Energy Research Unit.
- Prof. M. Chowdhury, Head, Physical Chemistry Department.
- Prof. U.R. Ghatak, Professor, Organic Chemistry Department.
- Prof. A. Chakravorty, Head, Inorganic Chemistry Department.
- Prof. N.G. Kundu, Head, Organic Chemistry Department.

INDIAN COPPER DEVELOPMENT CENTRE

Address:

27B, CAMAC Street,
Calcutta-700 016.

Background

Year of establishment	: 1976
Major objectives	: Conducting research in the area of material, process and application
Major research areas	: Copper based products and processes
Initial recognition by DSIR	: 1988

Income and R & D expenditure:

	1992-93	1993-94	(Rs. in lakhs)
<i>Income</i>			1994-95
Donations Received	1.99	2.47	2.54
Grants Received	Nil	Nil	Nil
Other income	52.64	64.48	73.70
<i>Expenditure on R&D</i>			
• Capital	0.49	2.58	15.83
• Recurring	31.42	35.52	46.35

Infrastructural facilities:

Land & Building: Area: 1980 sq. ft.; Value-Rs. 33.26 Lakhs

Equipment facilities: Gross value: Rs. 2.58 lakhs

List of sophisticated equipment:

Utilises equipments for metallographic studies, mechanical and physical testing equipments, analytical equipments, etc. available at Bengal Engineering College, Sibpur, Indian Institute of Technology at Kharagpur & Madras, Birla Industrial and Technological Museum, Calcutta, University of Agricultural Sciences, Dharwad, etc.

R&D Manpower:

	Qualification	Ful Time
Scientific & Technical	Applied and Engineering Sciences	4
Social Sciences and others		11

Library facilities : Technical publications, literature, journals, slides, video films, etc.

Major achievements claimed:

- Technologies developed and transferred for upscaling/commercialisation :

Assisted the industries in (i) development of aluminium bronze wrought and cast products, (ii) high conductivity copper and copper alloys, (iii) special heat exchange tubes, (iv) copper-nickel alloy products, (v) special grade enamelled wires and (vi) development of improved process route for manufacture of copper powders of ultra-fine particle size.

- New Technologies/methodologies developed and implemented:

Helped in developing—

- (i) A new continuous casting route for tube manufacture;
- (ii) A new process for manufacture of copper chemicals and high grade copper powder from industrial wastes;
- (iii) A new centrifugal casting process for manufacture of aluminium bronze casting;
- (iv) A new commercial process for production of electro refined copper cathode.

Assistance has been provided to several industries in adopting and improving the latest continuous casting process for manufacture of copper and copper alloy rods, strips and sections.

- Research papers/Reports Published : 3
- Seminars/Conferences attended/organised : 6 attended

Seminar Organised

- (i) A Seminar on "Copper for Air-conditioning and Refrigeration"
- (ii) An International Symposium "Copper in the '90s"
- (iii) An International Symposium "Globalisation-Its Impact of Indian Copper Industry"
- (iv) A Seminar on "Advanced Copper Radiator Technology"

Name and Designation of Senior Researchers:

- Dr. L.R. Vaidyanath, Director
- Dr. M. Viswanathan, Chief Technical Manager
- Dr. D. De Sarkar, Technical Manager

INDIAN INSTITUTE OF CHEMICAL ENGINEERS

Address:

Dr. H.L. Roy Building,
Raja Subodh Mullick Road,
Post Box No. 17001,
Calcutta-700 032.

Background

Status of the SIRO

Major objective

Major research area

Initial recognition

Income and R & D expenditure

		(Rs. in lakhs)		
		1992-93	1993-94	1994-95
Income				
Donations received	:	0.37	Nil	Nil
Grants received	:	Nil	Nil	0.20
Other Income	:	7.30	8.49	10.85
Expenditure on R&D				
● Capital	:	Nil	0.97	0.55
● Recurring	:	3.03	5.74	5.02

Infrastructural facilities

Land & Building : Area: 5 storied building having area of 2500 sq.ft. each floor

Value: Rs. 18,51,676.00 Lakhs

Equipment facilities : Research are being carried out in well equipped and modern laboratories of 46 Chemical Engineering Departments of Universities & Institutes distributed throughout India.

List of sophisticated equipment :
R & D Manpower

	Qualification	Full time	Part time
Science & Technical	Ph.D. in Chem. Engg.	5	1
Others		12	

Library facility : The Institute has a modern Library which, however, needs more assistance to strengthen and consolidate its activities.

Major achievements claimed

The Institute is presently working on six basic research projects. In addition to this, the major activities of the Institute include:

- Publishing research papers after proper assessment in the Indian Chemical Engineer, A quarterly journal of the Institute consisting of a journal section and an industry and news section, with international circulation.

- (ii) Organising Seminar/Symposium/Workshop in the area of chemical engineering & technology under the aegis of different Regional Centres distributed throughout India.
- (iii) Providing free guidance and advice to young researchers by the senior members of the Institute, many of whom are top experts in their respective fields.
- (iv) Helping to raise the standard of R&D work in the country by giving awards of excellence on a national level for basic research, design & development work, safety management etc.
- (v) Providing opportunities to practising engineers, who could not afford for adequate formal education, by way of upgrading their knowledge through Associate Membership Examinations conducted every year. This examination has been recognised by the Govt. of India as equivalent to a B. E. Degree in Chemical Engineering for the purpose of recruitment to higher posts.
- (vi) The Institute promotes research and education in the field of Chemical Engineering and Technology through participation in the deliberations of All India Bodies in evolving model syllabi, curricula, laboratory manual etc.
- (vii) The Institute monitors different refresher courses (short and long terms, off-campus summer and winter schools) for making up-to-date knowledge available to engineers and technologists.

Names and Designations of five Researchers

● Dr. K.K. Tiwari,	Professor
● Dr. G.D. Yadav,	Reader
● Dr. A.B. Pandit,	Reader
● Dr. S.K. Das,	Lecturer
● Dr. S.K. Sanyal,	professor

INDIAN INSTITUTE OF FOREIGN TRADE

Address:

B-21, Mehrauli
Institutional Area,
New Delhi-110 016.

Background

Status of the SIRO

: Indian Institute of Foreign Trade was established by the Ministry of Commerce, Government of India in 1964, as a Society registered under societies Registration Act XXI of 1860 (Punjab Amendment) Act, 1957.

Major objectives

: Since its inception, the Institute has been engaged in a variety of Research and HRD activities which may be specified under four principal categories: Market surveys in India and abroad; Studies on various functional areas of foreign trade; Provision of consultancy service to export enterprises and training of export management personnel.

Initial recognition by DSIR

: April, 1995.

Income and R & D expenditure

<i>Income</i>	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
Donations Recived	Nil	Nil	Nil
Grants Received (from MOC Government of India)	179.00	199.75	262.00
Other Income (IIFT income)	76.91	108.35	157.50

Infrastructural facilities

Land & Building

: Area — 3.08 acres;
Value: 5.30 crores

R&D Manpower

: Full time

Scientific & Technical

: 45

Social Sciences and others

: Doctrate and Post graduates, professionally qualified & experienced researchers, many of whom have acquired national and international recognition.

Library facilities

: The Foreign Trade Library of the Institute is one of the largest of its kind in the developing world. Besides possessing over 60,000 volumes in areas relevant to Foreign Trade Management, its collection of national and international journals and periodicals is almost unmatched. the Library receives more than 700 journals and periodicals through subscription and on exchange basis. It is a depository library of publications

of International Trade Centre UNCTAD/ GATT, UNCTC and a number of other international agencies. Research scholars from various universities, both Indian and foreign, make use of the library for their Doctoral and Post-Doctoral work.

Major achievements claimed : Research projects completed by the Institute in recent years include: Experience of Indian Joint Ventures in Technology Transfer to Select Developing Countries; Study on role of Private Sector in South Asian Cooperation; Foreign Investment Law and Policy in Select Developing Countries' Uruguay Round of Multilateral Trade Negotiations-Tariffication of Border Measures & Measurement of Producer Subsidy Equivalent; Impact of Import Liberalization on Exports; Concordance between National Industrial Classification (NIC) and Indian Trade Classification (ITC) (Rev. 2) and ITC (HS); Study on Feasibility of Rice and Wheat Exports; and Study on Evaluation of Export Processing Zones in India etc.

Seminars and Conferences : In recent months Institute has attended organised a number of Seminars/ Conferences on topical subjects in the field of international trade.

Any other:

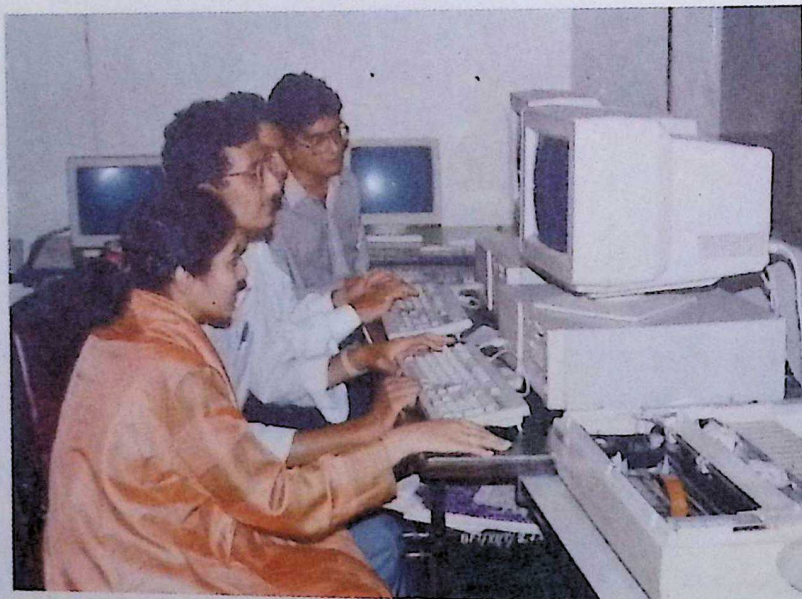
(i) Keeping in view the massive changes that would result due to the Uruguay Round and the policy initiatives to be taken by both the Government and the industry, the Institute has taken upon itself the task of making in-depth appraisal of the Uruguay Round and the WTO system to bring awareness of the opportunities and the threats involved. In this process it has already organised three Seminars and has planned several more in the coming months. Similarly, it has made available its expertise to analyse the international business situation and develop corporate strategy in the changed context in the form of consultancy services. Several large corporate bodies have already taken advantage of it.

(ii) In line with the on-going economic reforms in India and many other countries, the focus of IIFT research studies has shifted, since mid 1991, in

favour of subjects such as foreign direct investment, export of services, etc. Besides, because of the growing awareness and interest of the corporate sector in international business, client-oriented export marketing strategy studies at the company level form another significant segment of the Institute's present research studies. Because of the broad focus of its research, covering both market oriented studies and policy research, the Institute is the only organisation in the country which is in a position to undertake any kind of studies in the area of international trade and business for the benefit of its clients.

Name and Designation of Senior Researchers

- Dr. P.L. Sanjeev Reddy, Director General
- Prof. N. Parthasarathy, Dean
- Prof. S.K. Sehgal, Dean
- Prof. B. Bhattacharya, Dean
- Prof. Brij Mohan, Dean



IIFT — Computer Centre

INDIAN INSTITUTE OF PACKAGING

Address:
Plot E-2, MIDC Area,
Post Box No. 9432
Andheri (East), Mumbai 400 093.

Background

Status of the SIRO : The Indian Institute of Packaging established jointly by the Ministry of Commerce, Government of India and the Packaging and Allied Industries in the country was registered as a Society under the Societies Registration Act 1860, on 14th May, 1966.

Major objectives : The objective set for the Institute was to bring about improvements in packaging particularly for exports. The Institute is striving in this direction through activities covering Applied Research, Training and Education, Information, Testing, Quality Control, Package development, Feasibility studies, Graphic design and Publications. The Institute in consultation with trade and industry attempts to improve the standard both for the domestic and exports packaging.

Income and R & D expenditure

Income	1992-93	(Rs. in lakhs)	
		1993-94	1994-95 (Provisional)
Grants Received :	112.88	61.91	24.72
Other income :	110.73	184.27	276.92
Expenditure on R. & D.			
• Capital :	13.46	5.12	4.32
• Recurring :	128.74	133.80	134.02

Infrastructural facilities

Land & Building : Value : Rs. 85.91 lakhs

Equipment facilities : Gross Value : Rs. 28.60 lakhs

List of sophisticated equipment : The laboratories are well equipped with sophisticated facilities for testing and evaluation of materials.

R & D Manpower

Scientific & Technical	Qualification	Full time
	Doctorates	1
	Post Graduates	20
	Graduates	19
	Others	62

Library facilities : Well equipped Library and Data Bank with Technical and Foreign Journals. Library is manned by qualified Librarian and Library Assistants.

Major achievements claimed

• Research

The Institute undertakes self-sponsored and industry projects aiming at substitution of materials and improvements in designs.

• Technical Consultancy

The technical consultancy service is offered for range of consumer and industrial products for export or domestic

consumption. The expertise is also offered to the Bureau of Indian Standards, for standardising of materials, containers and testing methods related to package advice on material selection, inventory control, packaging line layout, warehousing, material handling and productivity is rendered through consultancy.

- **Techno - Economic Feasibility and Market Research**

Economic and market surveys are undertaken to project potential market for a new or existing packaging. The Institute also undertakes project evaluation, techno-economic feasibility studies and industry-status surveys.

- **Post Graduate Programme**

A two-year Post Graduate Programme in packaging technology has been introduced from 1985. The course is conducted in Bombay where hostel facilities are also available. The programme gives practical orientation through training and hence is well accepted by industry.

- **Intensive Training Programme**

Certificate Programme in Packaging is annually organised at Bombay and at the Regional Centres. The programme which is of 3 months duration is aimed at developing overall expertise needed for both the professionals and entrepreneurs. This programme is open to overseas participants under various schemes of Government of India and is accredited to Asian Packaging Federation.

- **Executive Development Programme**

Short duration training programmes on specific packaging topics are regularly conducted, besides tailor-made Inplant Programmes and in-laboratory trainings. For the benefit of the Small Scale units and Handicrafts Sector, workshops at rural centres are conducted.

- **Seminars**

The Institute organises seminars on topics of national importance with participation from overseas experts. The recommendations of these seminars help awakening the interest of industries and provide useful inputs to policy makers.

- **Testing and Quality Control**

The Laboratories of the Institute are well equipped to undertake a large number of tests on packaging media like paper, paperboards, glass, plastics, metals, wood, textiles, films, foils, laminates, composites and ancillary materials. Testing for UN Certification is taken up for dangerous goods.

- **Information**

The Library has a collection of over 6427 text books on packaging and related subjects. The library also subscribes to over 54 Indian and foreign periodicals and has the single largest collection of national and international standards.

- **Publication**

A bi-monthly magazine "Packaging India" containing techno-commercial information on the latest developments in packaging published by the Institute has wide circulation in the industry.

and trade. A number of text books, directories and reports are published on regular basis.

● Data Base

The computerised Pack-Data Centre at the Institute enables an easy access to the information on packaging developments, the world over. The centre also provides assistance on sourcing, reference data on packaging materials, machinery and standards besides bibliographies available.

● Graphic Design

A well-equipped graphic design studio at the Institute caters to the design needs of industries. The facility enables the Institute to provide graphic designs for packages, labels, logos trade marks, and brand image including art work, production and guidance in printing.

● Exhibitions.

The permanent exhibition at the Institute's head Office in Bombay focuses on the cross section of packaging materials, systems and machineries.

To promote packaging interests, the national exhibition "Indpack" is organised by the Institute every year at different industrial centres in the country.

● Awards

The innovations in packaging are encouraged through Indiarstar contests which help bringing out the hidden excellence. Winners are eligible to contest for "Asjastar" and "Worldstar" awards. Developments in machinery designing and manufacturing are encouraged through biennial Pacmachine award contest.

● Towards Exports

The Institute has close ties with the Commodity Boards, Government agencies and export industries with the common objective of promoting exports. Development programmes are also executed through agencies like Spices Board, Tea Board, Agricultural & Processed Food Products Exports Development Authority, Marine Products Export Development Authority, Coir Board, Handicrafts Board, Tobacco Board, etc.

● National and International Recognition

The IIP is a recognised Research and Development Centre by the Department of Science & Technology, The IIP houses approved laboratories by Bureau of Indian Standards. The IIP laboratory is the recognised testing and certification centre for export packaging of hazardous goods. The Institute also has the recognition of international agencies like UNIDO, ITC, etc. for project consultancies and training.

● International Co-operation

The IIP is a member of the Asia Packaging Federation and the World Packaging Organisation. The Institute's experts have helped many developing countries in promotion of packaging through the forum of UNIDO, ITC, ESCAP etc. The Institute undertakes training, research and development projects for developing countries, on behalf of UNIDO, UNCTAD/GATT, CFTC and EEC.

Name and Designation of five Senior Researchers:

- Mr. P.V. Narayanan, Director
- Mr. P.G. Deshmukh, Professor
- Mr. P.L. Nagarsekar, Professor
- Dr. N.G. Mokashi, Professor
- Mr. K.B. Gupta, Professor

Address
17, Tara
Calcutta

INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

Address:
17, Taratala Road,
Calcutta-700 088.

Background

- Status of the SIRO : An autonomous society under the West Bengal Societies Registration Act, 1961
- Year of establishment : 1937
- Major objective : Promote the use of jute through the application of Science & Technology

Major research areas:

- (i) Genetical studies for evolving high-yielding varieties of jute seeds
- (ii) Softening and upgrading of low grade jute fibres
- (iii) Scientific methods for selecting the most economical batch for a given purpose
- (iv) Optimisation of existing manufacturing processes
- (v) Simplification and cost reduction in existing conversion processes
- (vi) Product development for new end-uses
- (vii) Improvement of existing products to suit consumer's changing requirements
- (viii) Standardisation and quality control of products
- (ix) Instrumentation for process study and control
- (x) Design of improved spinning and weaving machinery
- (xi) Interfirm comparison of processing performance and consultancy services on mill problems
- (xii) Basic studies on jute and allied fibres

Initial recognition : 1966

Name and R & D expenditure:

	(Rs. in Lakhs)	
	1992-93	1993-94
Income		
Donations Received	Nil	Nil
Grants Received	305.00	12.51
Other income	4.64	12.51
Expenditure on R&D		
• Capital	49.29	23.51
• Recurring	281.60	255.62

Infrastructural facilities

- Land & Building: Value : Rs. 124.97 Lakhs
- Louppement facilities : Gross Value: Rs. 299.11 Lakhs

List of sophisticated equipment

The Centre is well equipped with sophisticated equipments like TLC, UV-vis spectrophotometers, gel Electrophoresis system, spectrophotometre, HPLc, Liquid scintillation Counter, X-ray Distractometer, scanning Electric inicroscope and a host of other sphisticated facilities

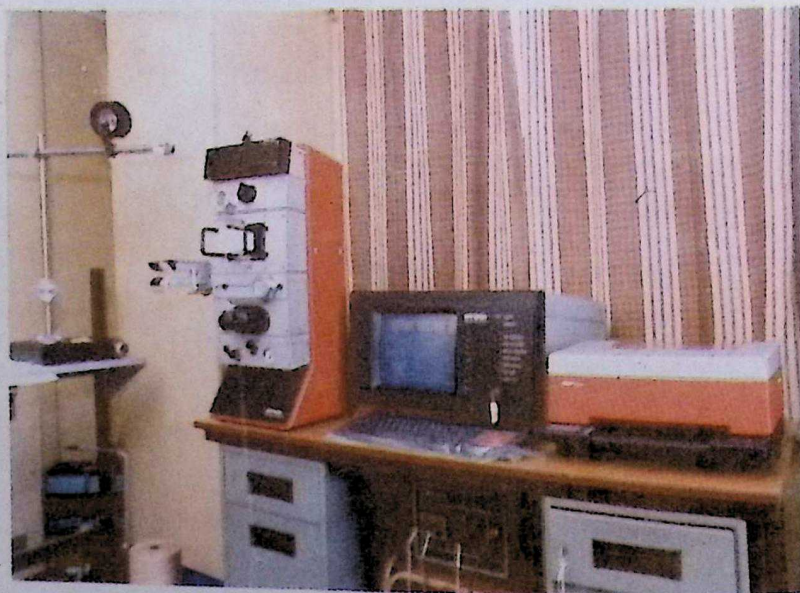
R&D Manpower : 160 (full time)

Library facilities

- (i) Library has spent Rs. 4 lakhs (approx) in 1994-95 for procurement of scientific and technical books and journals/periodicals.
in 1995, suscription paid to 75 nos. of journals and periodicals out of which 50 are foreign ones.
- (ii) Retrieval and dissemination of macro and micro documents for the researchers and member mill personnel.
- (iii) Member of SIRNET conducted by INSDOC form 1995

Major achievements clamied

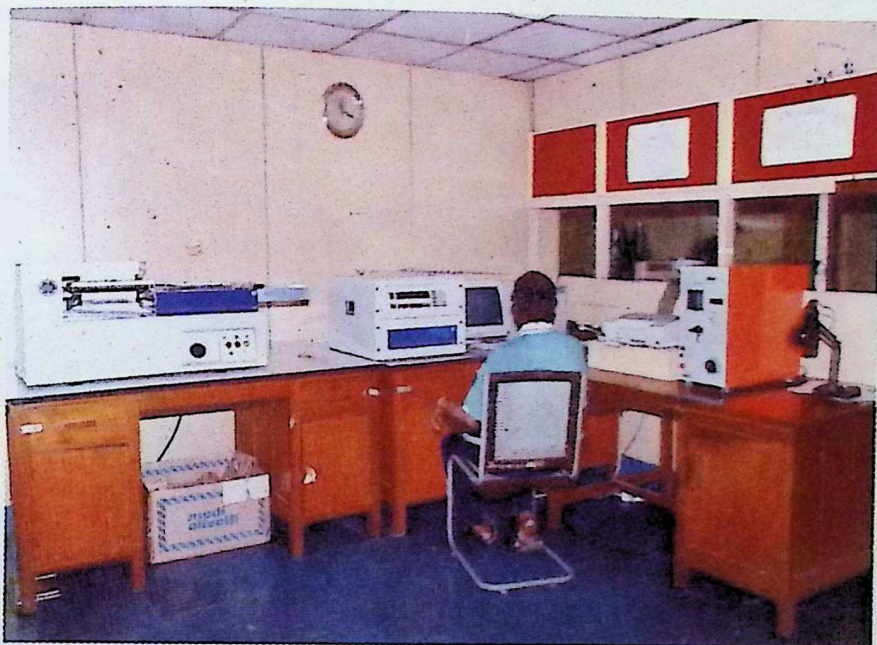
- | | |
|--|---------|
| • Technologies developed and transferred upscaling/commercialisation | 8 Nos. |
| • Technologies developed and ready for upscaling | 22 Nos. |
| • New Technique/methodologies developed and implemented | 21 Nos. |
| • Patents Filed | 9 Nos. |
| • Research papers/Reports published | 35 Nos. |
| • Seminar/Conferences attended/organised | 47 Nos. |



USTER Tester (UT-3)

Name and Designation of five Senior Researchers

- Dr. B.L. Ghosh, Dy. Director and Head Biology Divn.
- Mr. D.P. Khatua, Head, Centre for Machinery Designa & Development Divn.
- Dr. B.C. Mitra Head, Product Development Divn.
- Dr. D. Sur, Head, Physics Division.
- Dr. A. Lahiri, Head, Centre for Management Information System Divn.



Fibre length Analyser and Single Fibre Fineness tester

INDIAN PLYWOOD INDUSTRIES RESEARCH AND TRAINING INSTITUTE

Address:

Post Bag No. 2273,
Tumkur Road,
Bangalore-560 022

Background

Year of establishment : 1963

Major research areas : Conducting research in the areas of Wood and Wood-based Panel Products.

Initial recognition by DSIR : April, 1988

Income and R & D expenditure

	1992-93	1993-94	(Rs. in lakhs) 1994-95
<i>Income</i>			
Donations Received	Nil	Nil	Nil
Grants received	86.57	105.00	109.50
Other income	21.65	17.90	17.35
<i>Expenditure on R & D</i>			
• Capital	24.25	40.84	39.83
• Recurring	68.18	80.72	86.92

Infrastructural facilities

Land & Building : Value Rs. 59.58 Lakhs

Equipment facilities : Gross Value : Rs. 13.68 Lakhs.

List of equipemnt : — Fax machine, Laser Printer

List of sophisticated equipments :

Plywood pilot plant

Sawmill

Sawdoctoring Centre

Computerised Universal Testing Machine

James 'V' Meter - NDT equipment

Elastosonic - NDT equipment

Environmental Chamber capacity

Sigmareactor

Differential Scanning Calorimeter

High Performance Liquid Chromotgraphy

Spectrophotometer

R & D Manpower

Scientific & Technical	21
Others	85

Library facilities

: The Institute has a well equipped library with number of Books, Journals, Reports, Reprints, Specifications in the field of wood and wood based panels. Library is rendering reprographic services to member and non-member firms on request.

Major achievements claimed:

- (i) Researching suitable wood preserving chemicals and developing treatment processes for the variety of chemicals and combinations of chemicals with preservative qualities but less hazardous to humans and the general environment four process technologies such as chlorinated hydrocarbons, chloropyrifos, etc. were developed and transferred for upscaling. Two technologies viz. vapour boron treatment and control measures are ready for upscaling.
- (ii) Four Industry sponsored projects in the area of adhesives were investigated and technologies were transferred to the industry for adoption. These projects were (1) Colouring of veneers to simulate the colour of Gurjan; (2) Partial replacement of phenol with cardanol; (3) Adhesive formulations and identification of process parameters for the manufacture of BWR and BWP grade plywood; (4) Adhesive formulation for the manufacture of MR grade plywood.
- (iii) Improved process for the manufacture of Bamboo mat boards.
- (iv) Examining glue bond quality requirements, appropriate adhesive formulations with different combinations of extenders and additives fast curing phenolic resins, resins for bonding refractory sp., wood-metal bonding were developed and transferred to the industry for commercialisation.
- (v) Suitability of commonly imported species such as Mersawa, Rengas Nyotah for plywood manufacture were investigated.
- (vi) Prototypes on improved sawing systems and attachments for processing small diameter logs were developed to improve yields. The improved engineering and technological sawing system has been communicated for ENDOWARDS SADUMA AWARD instituted by FAO, Rome, Technologies for sawing and processing small diameter plantation grown species have also been developed.
- (vii) Studying problems of construction timber shortage, special type of glued laminated door frames from plantation grown species have been developed and upscaled for commercialisation.

- (viii) The Institute has developed LED Moisture Indicator and electronic clipper control systems instruments and these are upscaled and used in plymills.
- (ix) QC applications undertaken in plywood factories have helped to minimize down wastes, improve yield and output, lower costs and generally secure better customer satisfaction.
- (x) Training programmes have been conducted to train and develop professionally competent persons for middle management positions 124 graduate trainees and 669 persons in critical areas have been trained so far.

- Research papers/Reports published 62
- Seminars/Conferences attended/organised 58
- Any other : One processing system has been communicated for ENDOWARD SADUMA Award by FAO, Rome.



Vapour Boron treatment plant

INDIAN REGISTER OF SHIPPING

Background

Status of the SIRO

: Registered as a company u/s 25 of the Companies Act, 1956

IRS is the national ship-classification society and is dedicated to research and development in the field of shipping and allied industries, with the intent to develop Indian Shipping and Shipbuilding and reduce reliance on foreign classification societies operating in India.

Major objectives

: Formulate and update detailed Rules for construction and maintenance of ships and ensure compliance with these Rules through survey of ship's structure, machinery and equipment, thus enhancing safety of life and property at sea besides protection of marine environment.

Build database on the failure/service records of structures and machinery on ships and make the same available to shipping fraternity to ensure safer shipping.

To encourage research, design and construction of ships, marine equipment, industrial and general engineering equipment and improvement in their quality standards.

Major research areas

- (i) Development of detailed Rules and Regulations for Construction and Classification of Ships and their continuous update.
- (ii) Periodical inspections of ships and reporting on their performance in service.
- (iii) Analysis of the reported failure data to indicate probable causes and possibility for Rule updates and/or special projects for R&D.
- (iv) Special R&D projects relating to metallurgy, corrosion, fatigue failures, vibrations, hydro-dynamic loading and machine dynamics.
- (v) Development of specialised software related to Naval Architecture, Ship Structure, Vibration, Offshore Structures, Processing of Reports on Condition of Ships.

Initial recognition by DSIR

: 1988

Income and R & D expenditure:

	(Rs. in Lakhs)		
	1992-93	1993-94	1994-95
Income			
Donations received	Nil	Nil	Nil
Grants received	Nil	Nil	Nil
Other Income	529	568	600
Expenditure on R&D			
● Capital	220	562	320
● Recurring	332	341	589

Infrastructural facilities

Land & Building	:	About 5000 sq. metres costing about Rs. 1.212 crores.
Equipment facilities	:	Computers (Rs. 62 lakhs) Scientific Instruments (Rs. 20.5 lakhs)

List of sophisticated equipments

The major equipment available in the five laboratories (Chemical, Material, Stress and Vibration, Instrumentation and Test Centre) at the R&D centre are :

- PC-based LAN on ethernet and SFT III operating system with terminal facility for all scientists, engineers and supporting staff
- Spectrophotometer, Carbon-Sulphur Determinator
- Metallurgical microscope, Potentio-Kinetic Corrosion apparatus, Viscometer
- Vibration monitor/analyser, Strain gauging Equipment
- Universal testing machine, Impact testing machine, Hardness test machine and Ultrasonic flaw detector and other NDT equipment.

R & D Manpower

Category	Qualification	Full Time
Scientists	Doctorate	10
	Post Graduate	
Technologists	Graduates	61

Library facilities

The R&D cum Training Centre has an excellent technical and scientific library consisting of over 5000 technical books and 75 technical journals, besides CD-ROMs and other accessories.

Major achievement claimed:

- (i) IRS has made significant progress as an international ship classification society and in December, 1991, was admitted to the apex body "International Association of Classification Societies" (IACS) based in London and is now actively participating in four working groups set up by the IACS to deal with various technical issues at international level.
- (ii) IRS has developed very detailed Rules and Regulations for Construction and Classification of Ships which provide an internationally recognised standard for Ship design, Shipbuilding and Maintenance during the service life. Continuous updating of these Rules and formulation of additional Rules as required by the emerging trends also forms a major part of R&D activities of IRS.
- (iii) IRS has developed a large number of computer software programs relevant to its own functions and also for the benefit of shipbuilding industry in general, in the following areas:
 - Naval Architecture (Freeboard computation, Impact and Damaged Stability, Hydrostatics Cross Curves of Stability, Capacity Subdivision, Tonnage etc.)
 - Ship Structures (Longitudinal Strength, Grillages, 2D/3D Frame analysis, Torsion/Buckling, 3D analysis of Ship Structures by FEM, Special purpose programs for substructures e.g. ship's derricks/cranes/lifting gears)

cantilevers etc., Fully interactive scantlings calculation program to determine sizes of various members which automatically comply with strength requirements of the Rules).

- Offshore and General Structures (A package of program for offshore structures to generate geometry, load determination based on given wave parameters, static analysis with soil-structure interaction, FEM for stiffened plates and shells, analysis of pile foundation under lateral load, pile driving, generation of P-Y curves etc.).
 - Report processing (A package of programs to monitor the health of ships classed with IRS based on periodical inspections carried out, organisation of failure/deficiency data and its analysis).
- d) Recognised by the Directorate General of Shipping to carry out statutory surveys under SOLAS/MARPOL/ILLC and issue certificates on behalf of Govt. of India.
- e) IRS has published and presented a large number of technical papers in national and international conferences/journals, and also special presentations to shipowners/shipbuilders.

Name of five Senior Researchers

Apart from the Chief Executive Mr. S. Chandra and Chief Surveyor (Technical Services) Mr. A.K. Chopra who heads the R&D, the five main researchers are

- Mr. S. Kumar
- Mr. D.G. Sarangdhar
- Mr. J. Dasgupta
- Mr. G. Sinha
- Mr. M.K. Vedula

INDO-FRENCH CENTRE FOR THE PROMOTION OF ADVANCED RESEARCH

Address

Zone V, Core A, Ground Floor,
India Habitat Centre, Lodhi
Road, New Delhi-110 003.

1. Background

The Indo-French Centre for the Promotion of Advanced Research (IFCPAR) or the Centre Franco-Indien Pour la Promotion de la Recherche Avancée (CEFIPRA), as it is known in French, was established jointly by the Indian and the French governments with the primary objects of promotion of cooperation in advanced areas of fundamental and applied scientific research between India and France, through collaborative research projects, Indo-French workshops/seminars, etc. The expenditure of the Centre is equally shared by the Governments of India and France.

*Status of the SIRO

: IFCPAR was registered as a Society under Societies Registration Act of 1860 and started functioning in September, 1987.

Major research areas

(i) Pure & Applied Mathematics (ii) Theoretical Computer Science, Natural Language Processing, Computer System (iii) Cellular & Molecular Biology/Genetics, Genetic Engineering, Biotechnology including applications to Medicine and Agronomy, (iv) Medical Sciences; Immunology, Virology, Cancer Biology; New Drug Development; Biomedical Engineering, (v) Chemistry of Natural Products, (vi) Liquid Interface Science, (vii) Material Science & Engineering; Advanced Ceramics, Composites, Polymers, Rare Earths (ix) Environmental & Ecological Sciences, (x) Astrophysics and Radio Astronomy, (xi) Geophysics, Geosphere, (xii) Remote Sensing, (xiii) Water Resources (xiv) Semiconductor Physics Optoelectronics, Microelectronics & (xv) Separation Science & Technology.

Date of initial recognition : July 1993
by DSIR

Income and R & D expenditure

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations received	Nil	Nil	Nil
Grants received from Govt. of India & France	531.53	532.21	936.23
Other income	44.72	28.74	56.57
<i>Expenditure on R&D</i>			
• Recurring	495.21	605.66	825.74

Infrastructural facilities

Land & Building

Value:
: 500 sqmt. of office space has been acquired in India Habitat Centre, Lodhi Road, New Delhi at an estimated cost of Rs. 129.50 lakhs.

Equipment Facilities

: Sophisticated equipments such as Superfiring Unit, Transmission/Scanning Electron Microscopes, Special Graphite Furnace, HgCdTe Detector

Electro-chemical Impedance System, etc. have been installed in the collaborating institutions in India and France, for carrying out IFCPAR Research projects.

R & D Manpower

- : In addition to the permanent R&D manpower of the collaborating institutions, more than 200 JRFs/SRFs/RAs were appointed in the Indian laboratories under IFCPAR research programmes and more than 100 young Indian Post-doctoral fellows were attached for varying periods in the collaborating French institutions.

Library facilities

- : The Centre is building up a collection of English and French Scientific and technical books and other publications.

Major achievements claimed :

- Technologies developed and transferred for upscaling/commercialisation:

An in vitro system for screening of anti-malarials against exoerythrocytic stage malarial parasite has been successfully established for the first time at the Malaria Research Centre, through technology transfer under the aegis of the Indo-French Centre. The system for the production and harvesting of sporozoites from artificially fed mosquitoes has also been fully established. These achievements are considered as real assets to the fully functional National Malaria Parasite Bank.

- Technologies developed and ready for upscaling:

In a collaborative project implemented at the Madurai Kamaraj University, Madurai, the efforts resulted in cloning and sequencing of a New gene in *Z. Mobilis* where and never been detected before, having potential applications in alcohol and alcohol-based industry.

- New techniques/methodologies developed and implemented:

In a recently concluded collaborative project between Institute of Immunohaematology, Bombay and Hopital Robert Debre, Paris, established several recently described molecular biology techniques like Southern blot hybridization using P labelled as well as non-radioactive probes for alpha thalassemia, DNA haplotyping by PCR and DNA sequencing in the Indian laboratory by transfer of technology from the French group. The study employing these techniques indicated that sickle cell anemia in India is not uniformly benign as was believed.

- Patents filed:

Four patent applications have been submitted by the Centre to the patent authorities in India, as well as in France.

- Research papers/reports published:

More than 200 scientific publications in peer reviewed international journals, books and conference proceedings during the period from 1992-1995.

Reports:-1 state-of-art report on Opto-electronics was published in English as well as French and widely distributed among the scientific community in India and France.

- **Seminars/conferences organised:**

Seminars/conferences: Fourteen seminars/conferences on topics such Catalysis, Opto-electronics, Polymer science, Immunology, Computer science, Molecular biology etc. were organised under the aegis of the Indo-French Centre during the period 1992-95.

School: An Indo-French school on "Understanding large scale structures in the Universe" was organised at IUCAA, Pune in January 1995.

- **Awards won:**

Mr. P.G.S. Mony, Director of the Indo-French Centre for the Promotion of Advanced Research (IFCPAR/CEFIPRA) was awarded the insignia of Chevalier (Knight) in the Ordre National du Merite (Meritorious Order of the Nation) by the the President of France in 1993.

- **Any other information:**

The Indo-French Centre has brought out compilation of 155 research publications authored by Indian and French collaborators of projects during the year 1994.

Name and Designation of five Senior Researchers:

- Prof. V.S. Ramamurthy, Secretary, Department of Science & Technology, New Delhi.
- Dr. S.K. Joshi, President, INSA, New Delhi.
- Dr. P. Rama Rao, Senior Scientist, Defence Research Development Organisation, New Delhi.
- Prof. S.S. Jha, Distinguished professor, Tata Institute of Fundamental Research, Bombay.
- Prof. R. Kumar, Department of Chemical Engineering, Indian Institute of Science, Bangalore.

INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS

Address:
Swatantryaveer
Tatyia Tope Marg,
Chunabhatti,
Sion P.O. Bombay-400 022.

Background :

Year of establishment : IDEMI, a joint venture of the Govt. of India and UNDP/UNIDO came into existence in the year 1969 as a service to instrument industry organisation.

Major objectives :

- (i) Establishment of full-fledged facilities for electronic & pneumatic process control instruments evaluation.
- (ii) In-Corporation of facilities for product-cum-process development of Domestic Electrical Appliances and also for their testing/quality control right from raw-materials, components to the complete product.
- (iii) Modernisation of the Tool-room facilities and addition of sophisticated machineries useful for instruments & domestic appliances industry's critical needs.

Major activities of IDEMI :

● *Design and Development Laboratory:*

Design & Development is a continuous activity at the Institute and it is purely based on the emerging needs of the instrument industry. The Small Scale Units, by and large, are not in a "position" to bear R & D expenditure and moreover quite often they are not aware of the latest development trends. The development work at the IDEMI's above laboratory has, therefore, attracted many units and entrepreneurs and has resulted in a good rapport between the Institute and the various manufacturing units. The laboratory normally undertakes the development work in consultation with the users as well as the manufacturers so that the right type of product is developed which is commercially viable too. Institute's achievements in the design and development field and details on prototypes developed are published through News Letters and displays at exhibitions apart from individual contacts/communications.

● *Calibration and Testing laboratories :*

One of the major constraints of the Instrument Industry is the absence of an adequate level of consciousness of the importance of Standards through testing and quality control. The Institute provides physical facilities like Calibration & testing of electrical, electronic and process control instruments to ensure that the industry standards retain their accuracy. IDEMI tests samples supplied by the clients as per Indian or other Standard specification and issues Test Certificates.

Facilities for testing of Domestic Electrical Appliances as per IS:302 and other relevant Standards have also been added by IDEMI. This Domestic Appliances Testing Laboratory has been recently equipped with an Endurance Test Equipment for testing switches of various ratings and this equipment conforms to IS : 4949-1968 and IS : 3854-1964. Other facilities include Rain-Proof, Splash-Proof, Water-Jet protection as per IS : 2147-1962, Resistance to heat and tracking on Insulation materials, Mechanical Strength etc.

Process Instruments Testing Laboratory :

The facilities initially set up for testing of Process Control Instruments and allied items at the inception were limited and the Institute therefore, acquired a lot more standards and test equipment to considerably increase the nature of services being rendered. The availability of these new standards received under the UNDP project (2nd phase) has made it possible to effectively evaluate the performance of the related products as desired by the manufacturing or user industries. Moreover it has been possible to regularly undertake field calibration jobs in a better manner with the availability of more precise and sophisticated test standards. Besides maintaining TEMPERATURE - STANDARDS and PRESSURE STANDARDS the Laboratory has recently introduced facilities for testing of Liquid-Flow Measuring instruments by installing and commissioning of a Flow Testing System (Water medium) with capability to test flow meters of 2" to 8" size for the present. In addition gas-flow (Air medium) calibration within limited range would also be possible by means of a separate system being established. Majority of the Standards under use in this Laboratory are traceable to National Standard and some even to national Bureau of Standards, USA or other International Standards.

This Laboratory has been serving a large number of local manufacturers in testing and calibration of their substandards and at times even products for special applications. The Laboratory has also been entrusted with contractual process instruments calibration jobs at site at frequent intervals by large user organisations like ONGC and other Government Agencies in view of its higher potentialities & capabilities.

Tool Room Facilities

IDEMI Tool Room plays a vital role in the development of instrument industry whether it falls under small, medium or large scale. Apart from prototype models manufacturing the Tool Room greatly caters to the industry's needs in tool design, tool fabrication, critical and complex components production, batch production or special instrument products in smaller quantity etc. Right from the inception IDEMI Tool Room has been undertaking design & fabrication of precision tools, jigs & fixtures and moulds for die casting and components. These facilities have indeed opened up a new dimension to the manufacturers as well as the users. Machines for Chemical etching process and subsequent production of critical parts & components are installed and added to the work shop facilities under the UNDP project are well received by the industry. By accepting and undertaking precision jobs in Tool Room IDEMI's endeavour is mainly to help the Small Scale Sector for upliftment of their technology. Development & manufacture of import substitutes against specific demand is also undertaken by the Tool Room.

Training

As trained man-power is always an asset to any organisation manpower development is an important progressive measure even growing organisations have to take. More and more organisations are realizing this fact and arranging training of their technical personnel, in particular IDEMI's Training Division contributes a good deal in the above respect. The various training programmes conducted every year by the Institute are targetted at updating the knowledge of the professionals and other technical hands serving the instrument

industry. Most of these being short-term courses the industries normally don't hesitate to spare the personnel. Apart from routine courses/programmes/Workshops the Institute's Training Division also accepts proposals for arranging very specific or tailor-made programme from any organisation. These are also accordingly planned, designed suitably and organised with full professional approach. It is worth-mentioning that IDEMI's Training courses over the years are well received as the number of participants and sponsoring organisations are steadily increasing year after year.

Tailor-made programmes are at times arranged at the premises of sponsoring organisations if so desired by them. Apart from many small scale units, large organisation like Indian Oil Corporation, ONGC, B.E.L, R.C.F. etc. have also been regularly sponsoring their technical personnel as participants for the various training programmes. Besides Institute's own faculty, Experts/Specialists in the field of Electronics, Instrumentation, Computer Engg etc. are invited as guest lecturers for wider coverage of the respective programme contents more effectively and application oriented.

Income and R & D expenditure :

		(Rs. in lakhs)		
<i>Income</i>		1992-93	1993-94	1994-95
Donations Received	:	Nil	Nil	Nil
Grants Received		10.0	25.0	10.0
Other income	:	88.53	101.50	122.96
				(Apprx.)
<i>Expenditure on R & D</i>				
● Capital	:	79	708	340
● Recurring	:	466	385	360

Infrastructural facilities :

Land & Building	:	Value : Rs. 50 Lakhs
Equipment facilities	:	Gross Value Rs. 293.24 lakhs

List of sophisticated equipment :

IDEMI Laboratories are well equipped with Sophisticated equipments required for design of electrical measuring instruments.

R & D Manpower :

	Qualification	Full time
Scientific & Technical	Doctorates	1
Social Sciences and Others	Post Graduates	1
	Diploma Holder	1

Library facilities :

Technical Library having 1500 books on Electrical & Electronics Instruments. Tool Design of International repute are regularly subscribed to up date the technical know-how in the relevant field.

Major achievements claimed :

- (i) Microprocessor based Energy Meter
- (ii) Oil Petrol Mixing Pump for Two Wheelers with Digital Read out system.
- (iii) RVDT system for Control Valves.
- (iv) V. Square Hour Meter
- (v) Electronic single phase energy meter.
- (vi) Electronic position Transducer for control valves.

(vii) lectronic 3 phase energy meter.

- Research papers/Reports Published 4
- Seminars/Conferences Attended/organised 6
- Awards won Wisitex Award Feb. 1994.

Name and Designation of Senior Researchers

- Dr. K. Ramani, Jt. Director
- Shri S.G. Khaladkar, Jt. Director
- Shri S.R. Vichare, Asstt. Director

INSTITUTE FOR SOLID WASTE RESEARCH AND ECOLOGICAL BALANCE (INSWAREB)

Address:
FaL-G Mansion'
35 Shri Ventakeswara
Colony Sheilaganagar
Visakhapatnam-530 012

Background

Status of the SIRO	: Institution
Year of establishment	: February 1992
Major objectives	: To develop processes and technologies based on industrial solid wastes and to take them from lab to land.
Major research areas	: Industrial solid waste utilisation
Initial recognition by DSIR	: November, 1992

Income and R & D expenditure

		(Rs. in lakhs)	
Income	1992-93	1993-94	1994-95
Donations received	0.07	1.01	—
Grants received	Nil	2.00	3.00
Other income	Nil	1.33	6.74
Expenditure on R & D			
• Capital	Nil	1.90	4.16
• Recurring	Nil	0.08	1.16

Infrastructural facilities

Land	: Area: 1300 Sq. yds; Value: Rs. 2.52 lakhs
Equipment facilities	: Rs. 5.49 Lakhs

List of sophisticated equipment : UV-Visible Spectrophotometer

R & D Manpower

	Qualification	Full time
Scientific & technical	: LCE, BBM	1
Library facilities	: Worth of Rs. 65,000/- available.	

Major achievements claimed

- Technologies developed and transferred for upscaling/ commercialisation : FaL-G technology developed and commercialised towards rick production. About 40 plants are in successful operation.
- Technologies developed and ready for upscaling : FaL-G Cement
- New techniques/methodologies developed and implemented :
 - (1) Application of FaL-G blocks towards 'Khadanza' road activity and drain construction.
 - (2) Application of Portland: FaL-G mortar and concrete towards canal lining and drain construction.
- Research papers/reports published/presented in conferences : 29
- Seminars/Conferences/ Workshops attended/organised : Organised 'National Workshop' on FaL-G at Visakhapatnam (18-20 January 1995)

- Any other : A live demonstration of 1 km road with Portland: FaL-G concrete is under progress, for which grant is extended by HUDCO.

Name and Designation of Senior Researchers

- Mrs. N. Bhanumathidas, Director General
- Mr. N. Kalidas, Director



Framed structure with Portland: FaL-G including beams and slab.

INSTITUTE OF PESTICIDE FORMULATION TECHNOLOGY

Address:
Scope Complex, Core 6,
Second Floor,
Lodi Road,
New Delhi-110 003.

Background

- Status of the SIRO : Institute
- Year of establishment : 1991
- Major objectives : The objective of the institute is to promote and encourage the advancement of pesticide formulation technology in India with particular emphasis on pesticide industry.
- Major research areas : There are four departments in the Institute i.e.
- Formulation Department : to develop technology for new generation pesticide formulation viz. Water dispersible granules (WG), Suspension Concentrates (SC), Concentrated emulsions (EW), Micro-emulsions (ME) and controlled release (CR) formulations.
 - Analytical Development : To develop new analytical methods for pesticides and standard reference materials of pesticides.
 - Pilot Plant : To perfect the semi-commercial production of technologies developed by formulation development and other sources.
 - Bio-sciences : To test bio-efficacy of chemical as well as biocidal formulations alongwith proper application techniques.

Date of initial recognition by DSIR : 1992

Income and R & D expenditure

		(Rs. in lakhs)	
	1992-93	1993-94	1994-95
			(Sub. to audit)
Income			
Donations Received/			
Membership fees :	6.00*	4.00	15.20
Grants Received/Corpus fund :	38.00	64.00**	37.00
Other income :	4.27	9.43	22.16
Expenditure on R & D			
• Capital :	6.70	10.55	2.60
• Recurring :	36.27	43.34	45.61
Deposit in Corpus Fund/			
Membership Fund. :	—	33.00	15.20 ***

* Rs. 6.00 lakhs from industries for Corpus Fund in 1992-93 deposited in 1993-94.

** Rs. 27.00 lakhs from Government of India for Corpus Fund deposited in 1993-94.

*** Rs. 15.20 lakhs as Membership fees, transferred to Membership fund in 1994-95.

Infrastructural facilities

Building : 1405 sq. mtr.

Land : Sufficient for Experimental use.

Equipment facilities : Gross value : Rs. 637.00 Lakhs.

List of sophisticated equipment : The Laboratories are well equipped with sophisticated facilities like HPLC, IR, UV-vis, GC, Image Analyzer, etc.

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical	Doctorates & Graduates	19	21

Library facilities : Available

Major achievements claimed

- Technologies developed and transferred for upscaling/commercialisation. : 8 Nos. of technologies for Isoproturon 50 SC, Graphite Lubricant slurry, Monocrotophos 368L, Endosulfan 50 SC, Malathion 50 WP, Sulphur 52 SC, Chlorpyrifos 40 SC and Isoproturon 75WG etc. have been developed and transferred for upscaling and commercialisation.
- Technologies developed and ready for upscaling : 4 Nos. of technologies for Isoproturon 75WG, Chlorothalonil 50 SC, Lindana 57 SC and capsulated suspensions (CS) of Cypermethrin 25CS, Chlorpyrifos 20CS, have been developed and are ready for upscaling.
- New Techniques/methodologies developed and implemented : 4 Nos. of new techniques for suspension concentrates (SC) Water dispersible granules (WG), Concentrated emulsions/microemulsions(EW) and capsulated suspensions (CS) have been developed and implemented.
- Research Papers/Reports published : 2
- Seminars/Conferences attended/organised

Attended : 3

- i. International Symposium on Industrial Applications of Micro-emulsions Technology (1993).
- ii. Workshop on "Formulation Technology, held at Austria, (1993).
- iii. Indian, Science Congress (1995).

Organised :

18 Seminars/Workshops/training programmes on Pesticide Formulation Technology, Pesticide Registration and regulations, feasibility studies, Industry meet programmes on Industrial safety, effluent Treatment and packaging in pesticide formulation industries were conducted.

Name and Designation of five Researchers:

- Dr. Kawal Dhari, Secretary
- Dr. S.Y. Pandey Head, Analytical Division
- Dr. P.K. Ramdas Head, Formulation Lab
- Dr. N.R. Bhateshwar, Head, Bioscience Division
- Mr. R.P. Luthra, Head, Pilot Plant

INSTITUTE OF ROAD TRANSPORT

Address:

The Institute of Road Transport,
Taramani, Madras—600 113.

Background

Status of the SIRO	:	Institution
Year of establishment	:	1976
Major objective	:	Transport Oriented Research and Dissemination of useful knowledge for the development of Road Transport.

Income and R & D expenditure

	1992-93	1993-94	(Rs. in lakhs)	1994-95
<i>Income</i>				
Donations received:	406.60	201.84		173.21
Grants received:	Nil	Nil		Nil
Other income:	668.71	827.67		1044.77
<i>Expenditure on R & D</i>				
● Capital:	615.02	475.14		450.20
● Recurring:	475.04	543.44		705.06

Infrastructural facilities:

Land & Building : Value : Rs. 2135.00 lakhs.

Equipment facilities : Gross value: Rs. 758.75 lakhs.

List of sophisticated equipment:

The Laboratories are well equipped with sophisticated equipments with Perimeters, ophthalmoscopes, Eye testing equipments, Electric Pressure Resistance translucers, etc.

R & D Manpower

	Full time
Scientific & Technical	149
Social Sciences and others	311

Library facilities : Books	—	11871
Journals	—	53
Video Cassettes	—	133

Major achievements claimed:

- Research papers/Reports published : 8
 - (i) Strategic safety planning for vulnerable road users in Madras City.
Part—III — Cyclist opinion survey
and
Part V — Motorised two wheeler opinion survey.
 - (ii) National Highways in Tamil Nadu.
— A safety appraisal part — I Basic Report.
and
Part II NH5 Madras — Calcutta Road.
 - (iii) Quality of STU bus services in Tamil Nadu
— An Assessment.
 - (iv) Effect of Driving speed on fuel consumption.
 - (v) Individual bus accident analysis reports for all the STU's of Tamil Nadu for the year 1992.
 - (vi) A study on exhaust smoke density levels in PATC vehicles.
 - (vii) Spot speed and Geometric characteristics of Accident prone spots in National Highways 4 & 46.
 - (viii) Travel characteristics of MST & Travel as you please ticket system

Name and Designation of Senior Researchers

- Dr. R. Ganesan; Director
- Thiru R. Ramalingam,; Additional Director.
- Thiru P. Murugesan, Senior Deputy Manager.
- Dr. M. Shanmugam, Principal; I.R.T.T., Research Centre
- Dr. Sembon David, Dean, P.M.C., Research Centre.



A view of Mass Miniature Radiographic Equipment (MMR)

INTERNATIONAL ADVANCED RESEARCH CENTRE FOR POWDER METALLURGY AND NEW MATERIALS (ARC-INTERNATIONAL)

Address:

Survey No. 74
Opp: Balapur Village,
RCI Road, Hyderabad-500 005.

Background

Status of the ISRO	: Registered Society
Year of establishment	: 1990
Major objections	: Bring in technologies from CIS in the areas of Powder Metallurgy, Ceramics and New Materials to Indian Industries
Major research areas	: Power Metallurgy, Ceramics & New Materials and Surface Engineering.

Income and R & D expenditure

	1992-93	1993-94	(Rs. in lakhs)
Income			
Donations Received	Nil	Nil	
Grants received	792.00	1432.40	2083.8
Other income	17.35	79.96	121.28
Expenditure on R & D			
• Capital	13.60	290.52	781.4
• Recurring	1.57	17.53	58.5

Infrastructural facilities

Land & Building	: 95 Acres and 22 Guntas
Equipment Facilities	: Gross Value : 396.83 Lakhs.

List of sophisticated equipment:

The Laboratories are well equipped with sophisticated facilities like G.C., Plasma Synthesiser, Extrusion Press, Spray Drier, Dilatometer, Vacuum furnace, etc.

R & D Manpower	: Qualification
Scientific & Technical	: Doctorate Postgraduate Graduate Diploma
Social Science and other	: Akwai Other Professionals Degree & OG Inter/Metric Other

Library:

The Technical Information Centre at ARC - International has been established with the ultimate aim of creating a national Information Centre for Powder Metallurgy, Ceramics, Surface Engineering and Non-Ferrous Materials.

Highlights:

Subscriptions to 34 reputed journals on the above subjects. Over 300 technical books relevant to the Centre's activities.

Specialised services:

On-line link with Dialog Databases.

CD-ROM Database Services (Metades, EMA & MBF)

Network Linkages:

Hylibnet (Hyderabad Library Network)

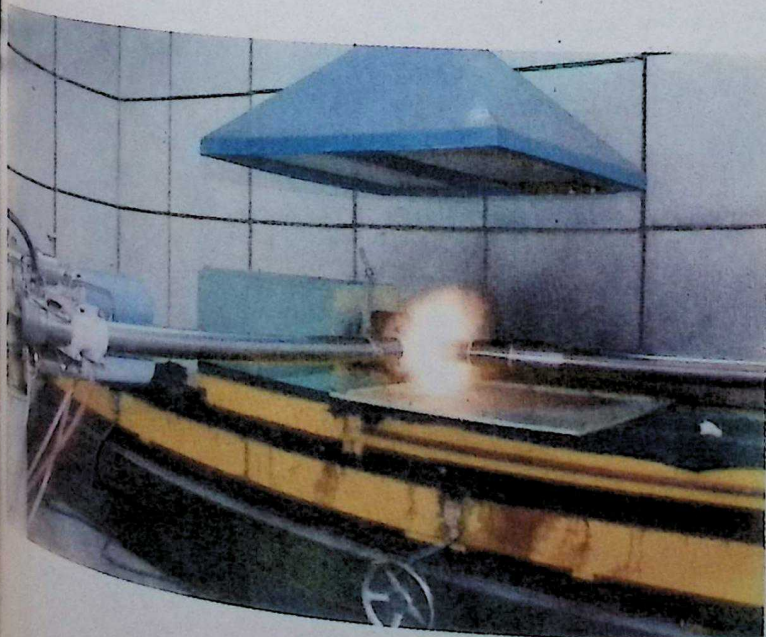
INSDOC

Patents Information System, Nagpur

National Informatics Centre, Delhi

Major achievements claimed:

- Technologies Developed and:
 - (i) Artificial Marble like Gypsum Tiles.
 - (ii) Production of iron powder using vertical shaft reduction furnace.
- New Techniques/Methodologies developed and implemented
 - (i) Refrigeration based on the principal of adsorption.
 - (ii) Technology for Production of heat PIPES.
 - (iii) PM Stator Rotor for Ceiling fans.
 - (iv) Development of Titanium Dental Implants.
 - (v) Bone joining plates.
 - (vi) Anodes for capacitors.



Dnipier 3

- Patents filed:
- Research Papers/reports:
Published:
- Conferences/Workshops
Organised/Participated:

25 (1993); 8 (1994); 6 (1995)

- (i) 'Conferences'
 - PMAI 1993, Trichy
 - PMAI 1994, New Delhi
 - PMAI 1995, Calcutta
- (ii) 'Exhibitions'
 - IIM 1994, Hyderabad
 - MRSI 1994, Hyderabad
 - MRSI 1995, Hyderabad
 - PMAI 1994, New Delhi
 - Insovox 1992, Hyderabad
- (iii) 'WORKSHOPS'
 - INSOVEX 1992,
 - HYDERABAD



Korund Vertical D-Gun

INTER-UNIVERSITY CENTRE FOR ASTRONOMY AND ASTROPHYSICS

Address:
Post Bag 4, Ganeshkhind,
Pune-411007.

Background

An autonomous institution created under sec. 12 ccc of UGC Act 3 of 1956. The institution was registered under the Societies Registration Act of 1860 on 22.11.88. Main objectives are teaching and research in Astronomy and Astrophysics.

Income and R & D expenditure

<i>Income</i>	1992-93	1993-94	(Rs. in lakhs)
			1994-95
Donations received	Nil	Nil	6.50
Grants received	631	429	414
Other income	9	6	9
<i>Expenditure on R & D</i>			
● Capital:	566	279	230
● Recurring:	127	151	186

Infrastructural facilities

Land & Building: Area: 7.74 Hectares

List of Sophisticated equipment

A modern Computer Centre with workstations in a network, an Astronomical Data Centre and an Instrumentation Laboratory for developing astronomical instruments are functioning.

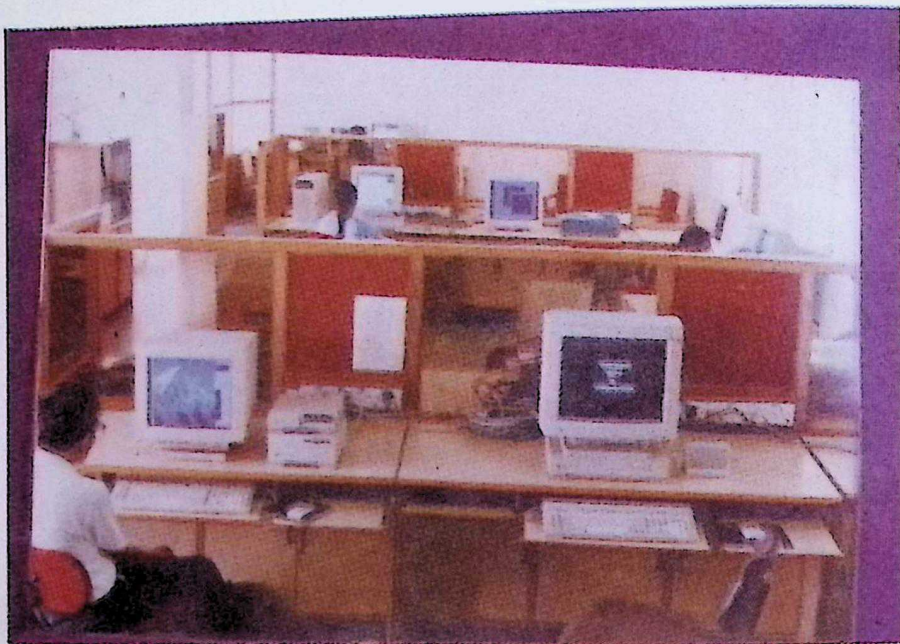
R & D Manpower	: 16 (Full Time)
Library facilities	: No. of Books 8124;
	No. of Subject Journal 200;
	No. of Periodicals 3747.

Major achievements claimed:

- Technologies developed and ready for upscaling: A sensitive liq. N₂ cooled CCD camera
- Research papers/Reports published : 39
- Seminars/Conferences attended/organised : 19
- Awards won : 6

Names of Senior Researchers:

- Professor J.V. Narlikar
- Professor S.N. Tandon
- Professor T. Padmanabhan
- Professor N.K. Dadhich
- Professor A.K. Kembhavi
- Professor S.V. Dhurandhar
- Professor N.C. Rana
- Professor Varun Sahni



Computer Centre in IUCAA

JAGDALE SCIENTIFIC RESEARCH FOUNDATION

Address:
27, Bull Temple Road,
Basavangudi,
Bangalore-560004.

Background

Status of the Institution : Registered Society
Major research areas : Bulk Drugs, Pharmaceuticals, Biotechnology, Nutrition etc.
Initial recognition : 1982

Income and R & D expenditure

	1992-93	1993-94	(Rs. in lakhs) 1994-95
Income			
Donations Received	7.00	30.00	25.50
Grants received	Nil	Nil	Nil
Other income	13.30	14.21	16.38
Expenditure on R & D			
• Capital	49.13	1.35	1.68
• Recurring	14.25	11.19	12.22

Infrastructural facilities

Land : Area: 4 Acres 5 guntas (16,497 sq. metre)
Building : Value: Rs. 34.40 lakhs
Equipment Facilities : Gross Value: Rs. 82.76 lakhs

List of sophisticated equipments:

High Performance Liquid chromatography with quaternary gradient system.
Gas-Liquid chromatograph
UV-Visible spectrophotometer
Infra red spectrophotometer
Fast protein liquid chromatograph
Electrophoresis
Image analyser
Water purification system (ultra pure water)
Brook Field viscometer

R & D Manpower

	Qualifications	No.
Scientific & Technical	Doctorates	4
	Post Graduates	3
	Graduate	1

Library facilities

The Foundation has a library with technical reference books on Organic, Medicinal, Pharmaceutical and Bio-chemistry and related area. Many journals and periodicals in medicinal, Pharmacy and food technology are being subscribed.

Major achievements claimed:

(i) Bulk Drugs

In the area of bulk drugs the foundation has developed innovative and commercially feasible processes for the production of Isox Suprine Hydrochloride (peripheral vasodilator) chlorzoxazone (skeletal muscle relaxant) and verapamil Hydrochloride (cardiovascular). These processes have undergone pilot plant study and have been found to be commercially viable. Commercial processes for versatile intermediates such as Parahydroxy propiophenone, Phenoxy isopropylamine and cyanoacetamide have been developed and are being employed for

regular production. Processes for bulk drugs such as phenylpropanolamine hydrochloride and allopurinol, intermediates like azacyclonol, methylenedioxyaniline and 2-phenyl butyramide have been developed. The pilot plant study of these processes will be taken up shortly.

(ii) *Formulations*

In the area of formulation and related products, technology has been developed for multivitamin drops, syrup, capsules and injection. A mixed Fruit jam containing vitamins has been developed. The technologies for these have been passed on to a needful drug unit for commercial exploitation. Development of a sustained release unit containing isoxsuprine hydrochloride, development of a new cough syrup, a new formulation containing protein, vitamins and minerals are some of the successful research projects undertaken.

(iii) *Food Additive/Excipient*

The foundation has successfully developed a process to manufacture sodium carboxy methyl guar from readily available guar and have discovered new applications for this in Pharmaceutical formulation, cosmetics and food processing.

(iv) *Bio-Technology*

The bio-technology division has isolated haemocoagulase enzymes from the crude venoms of Bothrops Jararaka and Bothrops atrox. The enzymes have been found to be comparable with the imported enzymes in their activity and potency. The process is undergoing commercial scale investigations and when completed will lead to considerable saving of foreign exchange.

Presently attempts are being focused on the isolation of haemocoagulase present in India russel viper venom.

Bio-technology group has developed a commercial process for production of pure egg protein isolate free from fat, lecithin and cholesterol. The isolation of lecithin from egg pulp has also been accomplished.

(v) *Miscellaneous*

The foundation offers its research facilities and expertise to academic institutions for R&D project. Post graduate students from Pharmacy colleges and University collaborate with the foundation for their project work.

Research papers/reports published: 4



Formulation Development Lab.

Name and Designation of Senior Researchers:

- Dr. K.L.K. Paranjothy, Vice President (R&D)
- Dr. T. Srinivasa Murthy, Vice President (Operations)
- Dr. R. Shivaramakrishnan, General Manager (R&D)
- Dr. Rajiv Mahajan, Product Development Officer
- Dr. K.V. Udupa, Scientist.



Sophisticated Instruments Room

JAWAHARLAL NEHRU ALUMINIUM RESEARCH DEVELOPMENT AND DESIGN CENTRE

Address:

Jawaharlal Nehru Aluminium
Research Development and
Design Centre, Wadi, Amravati
Road, P.O.-Wadi, Nagpur-440023,
Maharashtra.

Background

Status of the SIRO

: The Jawaharlal Nehru Aluminium Research Development and Design Centre (JNARDDC) is a Society under the Ministry of Mines, Government of India year of established in April 1989 with the assistance of the United Nations Development programme (UNDP).

Major objectives

- to assimilate and adapt the various technologies available in the Indian aluminium plants and adapt them for design of future plants;
- Assist the aluminium industries in the transfer of technology from know-how suppliers;
- Carry out research work on process efficiencies, metal quality, pollution control, energy and material savings;
- Set up a data bank and offer training programmes.

Major research areas

: Ronxite characterisation, alumina and aluminium production and analytical work

Initial recognition by DSIR

: January 1990

Income and R & D expenditure

		(Rs. in lakhs)	
<i>Income</i>	<i>1992-93</i>	<i>1993-94</i>	<i>1994-95</i>
Donations Received	NIL	NIL	NIL
Grants Received	352.00	212.60	400.00
Other Income	29.39	6.88	6.29
<i>Expenditure on R&D</i>			
● Capital	446.30	267.35	95.27
● Recurring	51.39	70.84	94.00

Infrastructural facilities

Land & Building : (i) Land: Area : 4018 Hectare
Value : Rs. 18.18 Lakhs.
(ii) Buildings: Value : 534.00 Lakhs

Equipment facilities

Government of India equipment : Rs. 310.65 lakhs

UNDP equipment : US\$ 23.81 lakhs

List of sophisticated equipment : The Centre is well equipped with sophisticated equipments such as X-ray Diffraction and X-ray Fluorescence Units, Scanning Electron microscope, IR Spectrometer, Atomic absorption spectrometer, Hydrogen determinator and a host of other facilities.

R & D Manpower

	Qualification	Full time
Scientific & Technical	Doctorate	5
	Post Graduate	15
	Graduate	12
Social Sciences & others	Post-graduate/graduate with professional qualifications	11
	Others	6

Library facilities : A fully equipped library with facilities for computer search of literature is available

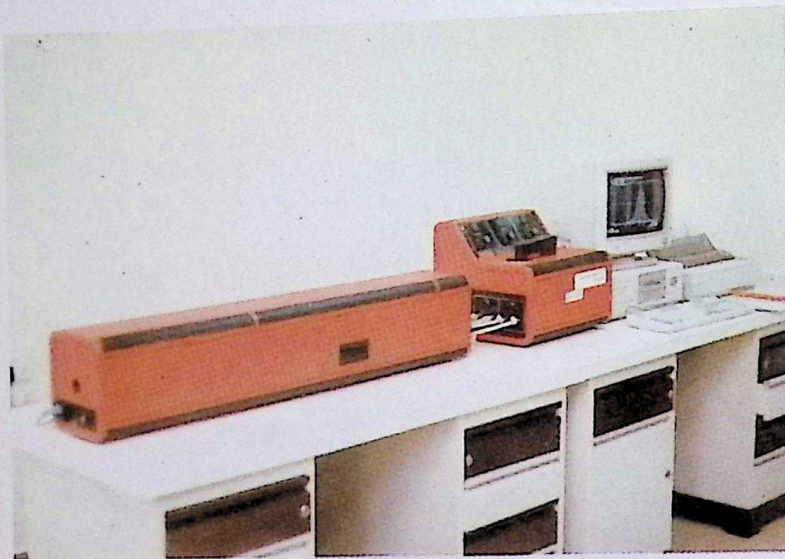
Major achievements claimed

- **New Techniques/methodologies developed and implemented** : Two state digestion process for bauxite developed and a proposal submitted to the National Aluminium Company for their consideration
- **Research papers/Reports Published** : 13 research papers were published during the period 1993-95; 19 research projects have been completed and 8 R&D projects are in hand.
- **Seminars/Conferences attended/organised**
 - i) Workshop on Organics & Precipitation in Alumina production
 - ii) Workshop on Computer based Mathematical Modelling of Aluminium Production processes
 - iii) Workshop on Production & applications of special alumina chemicals
 - iv) Nature, Analysis and Impact of organics on the Bayer cycle & their control
 - v) Workshop on Production of Carbonaceous materials & Anode technology in Aluminium Industry
 - vi) Workshop on New Material for the Aluminium electrolysis cells
 - vii) Workshop on Improvement of Alumina Technology

Award won : Hindustan Zinc Gold Medal of the Indian Institute of Metals awarded to Dr. T.R. Ramachandran, Director of the Centre for the year 1994 for his significant contributions to the field of Nonferrous Metallurgy.

Name and Designation of Senior Researchers

- Dr. T.R. Ramachandran, Director
- Mr. R.N. Goyal, Head of the Alumina Production Research Department
- Mr. H. Mahadevan, Scientist III
- Dr. A.K. Nandi, Scientist III
- Mr. G.S. Sengar, Scientist III



Laser Particle size Analyser



Precipitation Desilication Unit



Carbondioxide Reactivity set up for Carbon Activity

JAWAHARLAL NEHRU CENTRE FOR ADVANCED SCIENTIFIC RESEARCH

Address:
Jakkur P.O., Bangalore 560 064.

Background

Status of the SIRO

: Registered Society

Year of establishment

: 1989

Major objectives

: To carry out and promote front-line research in selected areas of science and engineering;

To promote collaborative research with scientists at the Indian Institute of Science and other institutions in the country;

To provide a national and international forum for in-depth discussions on important scientific topic in areas of vital interest to scientists of the Centre and in the country at large;

To organize periodic winter and summer schools in certain areas, where young talented scholars would be associated;

To provide opportunities for talented young students to carry out research projects.

To provide facilities to visiting scholars and faculty from all over India and abroad, to work for extended periods at the Centre;

To publish monographs and reports on frontier and futuristic areas of science as well as monographs of educational value.

Atmospheric Sciences and Theoretical Fluid Mechanics.

Condensed Matter Theory

Ecology and Biodiversity

Physics and Chemistry of Materials including surface science and Molecular Electronics

Nano-Materials and Carbon Structures

Emerging areas of Computer Science

Human Genome

Gene Targetting, Gene Therapy and Molecular Parasitology

Major research areas

Income and R & D expenditure

		(Rs. in lakhs)		
Income	:	1992-93	1993-94	1994-95
Donations Received	:	Nil	Nil	Nil
Grants Received	:	265.00	270.00	510.00
Other income	:	41.00	14.00	21.00

Expenditure on R&D

● Capital	:	267.63	363.62	—
● Recurring	:	60.13	79.80	372.55
				124.65

Infrastructural facilities:

Land & Building	: Area	: 15.5 acres;
	Value	: Rs. 927.12 lakhs
Equipment facilities		: Gross Value: Rs. 300.92 lakhs

List of sophisticated equipment :

SEM, TEM, Surface Spectrometer, Magnetometer, STM/AFM and X-ray Diffractometer

R&D Manpower:

	Qualification	Full time	Part-time
Scientific & Technical	Doctorates	22	—
	Post Graduate	22	47
	Graduate	3	—

Library facilities

The Centre's Library has about 1200 titles in interdisciplinary areas and subscribes to 40 scientific Journals

Major achievements claimed

- Research Papers/Report : About 360 research papers and Published reports
- Seminars/Conferences : 25—30 Annually Organised attended/organised
- Awards won : 17

Name and Designation of Senior Researchers

- Prof. C.N.R. Rao, President
- Prof. R. Narasimha, Chairman, Fluid Dynamics Unit
- Prof. Madhav Gadgil, Chairman, Gene Targeting, Gene Therapy and Molecular Parasitology Laboratory
- Prof. S. Ramasesha, Chairman, Computer Laboratory

JAYANT INDUSTRIAL & SCIENTIFIC RESEARCH

Background:

Year of establishment	: 1975
Major research areas	: Research & Development of the products from Castor Oil & its Derivatives.
Initial recognition by DSIR	: 1975

Income and R & D expenditure:

	1992-93	1993-94	(Rs. in lakhs) 1994-95
<i>Income</i>			
Donations received	Nil	Nil	Nil
Grants Received	Nil	Nil	Nil
Royalty	—	10.00	10.00
Other income	2.79	1.33	0.042
<i>Expenditure on R & D</i>	19.59	16.69	—

Infrastructural facilities

Land & Building	: Area: 7585.35 Sq. Mtrs; Value : 16.30 Lakhs
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List of sophisticated equipment :

Gas Liquid Chromatograph
 Spinning Band Distillation Set Up
 U.V. Spectrophotometer with Recorder
 Gardner Colour Tubes
 Memotiraor DL40
 Molecular Distillation Assembly
 Leybold Heraus GmbH KDT-6 Model
 Tensometer
 Breakdown Voltage Tester, etc.

R & D Manpower:

	Full time	Part time
Scientific & Technical	11	4
Social Sciences & Others	4	2
Library facilities	: In-House	

Major achievements claimed :

- Technologies developed and transferred for upscaling/ commercialisation : PGPR, Methyl Ester, Fortified Castor Meal
- Technologies developed and ready for upscaling : (i) AMIDIFICATION
(ii) DIELS - ALDER

- Research Papers/Reports : 3
Published
- Seminars/Conferences : 5
organised/attended
- Awards won : Import Substitute Award for Dimer
Acid

Name of five Senior Researchers:

- Dr. S.V. Udeshi
- Dr. V.V.R. Subrahmanyam
- Dr. S.M. Vaidya
- Dr. J.V. Majumdar
- Dr. H.J. Amin

JAYRAMDAS PATEL SCIENTIFIC RESEARCH FOUNDATION

OPMENT

or Dimer

Address:
705 Eros Apartments,
Preeti Place,
New Delhi-110 019.

Background

- Status of the SIRO : Scientific Research Association
- Year of establishment : April, 1981
- Major objectives/
Major research areas : Conducting Research in the areas of paper, board, foil, plastic films, laminates, adhesives, inks and speciality coating for development of appropriate cost effective packaging for food, pharmaceuticals cosmetics etc.
- Initial recognition by DSIR : 1982

Income and R & D expenditure

Income	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
Donations Received	6.00	4.00	4.50
Grants Received	Nil	Nil	Nil
Other Income	1.41	1.49	1.71
Expenditure on R&D	7.77	6.21	6.13
● Capital			
● Recurring		(Not reflected)	

Infrastructural facilities

- Land & Building : Value: 11.63 Lakhs
- Equipment Facilities : Gross Value: Rs. 5.04 Lakhs

List of sophisticated equipment

Humidity Cabinet
Automatic Ural Fischer Equipment
Spectropotometer
Conductivity Meter
R R Tester
Box Compression Tester
ABBE Refractometer

R&D Manpower : 12

Library facilities : Technical Library containing 300 books, 10 Technical Magazines are regularly subscribed from India and Abroad.

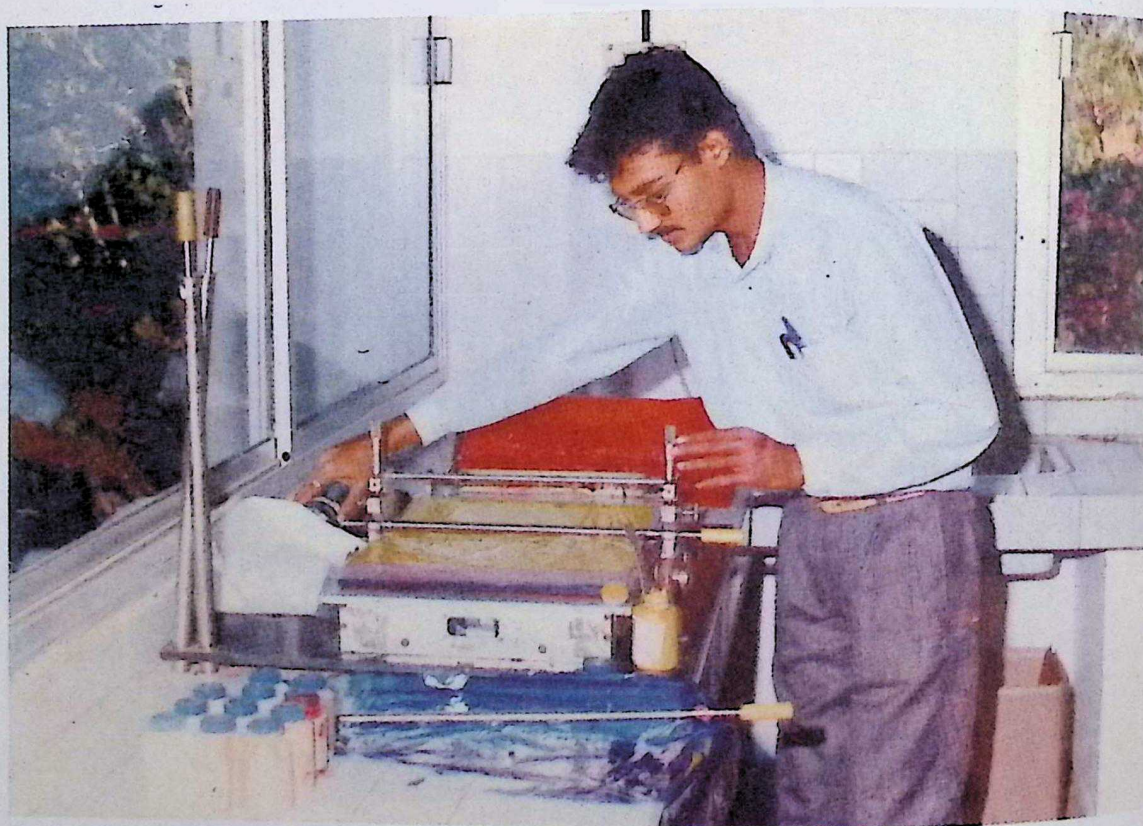
Major achievements claimed:

- Technologies developed and transferred to upscaling/
commercialisation : Development of Multilayer Polyethylene lamination grade film for improved strength with cost Economy for Flexible Packaging of food products.
- Technologies developed and ready for upscaling : (i) Development overprint varnish for offset printing.
: (ii) Development of Ink/Medium for Grannure printing.

- New Techniques/methodologies developed and implemented : (i) New process Developed for manufactured for laminates for condoms through extrusion
this leads to import substitution.
- Research papers/ Reports Published : 4
- Seminars/Conferences attended/organised : 6

Name and Designation of five Senior Researchers

- Mr. P. Das Gupta, General manager (R & D)
- Mr. Deepak Kumar Dep., Manager (R&D)
- Mr. Kamlesh Parikh, Asst. Manager (R&D)
- Mr. Ketan Shah, Chemist
- Mr. S. Bhattacharya RES, Scientist



KARNATAKA REGIONAL ENGINEERING COLLEGE, SURATHKAL

Background

The Karnataka Regional Engineering College, Surathkal is one of the 17 Regional Engineering Colleges established in the country by the Government of India and is a joint venture of the Government of Karnataka and the Government of India. Started in July, 1960 it is the second among the first batch of eight such colleges set up in the country. The college in addition to imparting good engineering education also provides for development of a cosmopolitan outlook among students by creating an all India environment, leading to greater National Integration.

The college is affiliated to Mangalore University and runs 8 Under Graduate courses, namely, 1. Civil Engg. 2. Mechanical Engg. 3. Electrical and Electronics Engg. 4. Electronics and Communications Engg. 5. Chemical Engg. 6. Metallurgical Engg. 7. Mining Engg. 8. Computer Engg.

It also runs a three years course in master of Computer Applications and M. Tech courses in (i) Industrial Structures (ii) Geo-Technical Engg. (iii) Marine Structures (iv) Hydraulics & Water Resources Engg. (v) Heat Power Engineering (vi) Advanced Manufacturing Eng. (vii) Industrial Electronics (viii) Digital Electronics & Advanced Communication Engg. (ix) Chemical Plant Design (x) Industrial Pollution Control Engg. (xi) Process Metallurgy (xii) Materials Engg. (xiii) Systems Analysis & Computer Applications (xiv) Power & Energy Systems.

Major research areas :

Geotechnical; structural engineering; wave mechanics; coastal erosion; remote sensing; IC engines; fibre optics technology; power electronics; Environmental monitoring protection; corrosion foundry and Mineral beneficiation; rock mechanics; blasting studies; crystal-growth and thin films; electroplating; and numerical analysis.

Income and R & D expenditure:

Expenditure on R & D for PG courses and UG courses is met from recurring grant. In addition over the years many organisations like UGC, CSIR, Ministry of Human Resource Development, Department of science and Technology, ARDB, other research organisations and industries have supported research projects in the college. College has also received grant from Ministry of HRD under Modernisation of labs and Thrust areas.

Infrastructural facilities:

The college campus covers an area of 295 acres in picturesque surrounding with Western Ghats in the east and the vast Arabian Sea in the west.

List of sophisticated equipment :

The centre is equipped with analytical instruments for vacuum coating systems, environmental monitoring & high voltage testing.

R & D Manpower :

Being teaching institution people involved in R & D are the faculty members (about 180), PG students, UG students (project work), research scholars and project assistants.

Library facilities :

The college has a central library which is computerised. E-mail facilities are available. The library subscribes to 436 journals annually and

Address:
P.O. Srinivasnagar,
DK-574 157,
Karnataka State,
India.

has 75,000 books. College also has a Central Computer Centre. Computer facilities are also available in the various departments.

Major achievements claimed :

In the last three years more than 90 research papers have been published. During this period, staff members have attended more than 50 seminars/conferences, 1 staff member won the Young Metallurgist Award from Government of India during 93-94. 2 staff members from Computer Department and 3 staff members from Electronics and Communication department visited U.K under the ODA programme.

KARNATAKA STATE SERICULTURE RESEARCH AND DEVELOPMENT INSTITUTE

Address:
Thalaghattapura,
Bangalore-560 062.

Background

Karnataka State Sericulture Research and Development Institute was established in the year 1981 by the Government of Karnataka under the societies act (1961) to find solutions to various problems being faced by the Sericulture Industry at different levels.

The institute has been recognised as the centre of Advance studies and research from 5 universities in Karnataka and two from out side. Further the institute is a member of International Sericulture Commission (ISC France and International Silk Association (ISA) U.K.

Income and R & D expenditure

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Grants received	145.54	204.07	188.33
Other Income	5.66	6.72	9.91
<i>Expenditure on R&D</i>	182.54	187.37	205.33
● Capital :	59.97	37.46	18.51
● Recurring :	122.57	149.91	186.82

Infrastructural facilities

Land & Building : Area 42.8 Hectares; Value Rs. 264 Lakhs
(including Sub-Stations)

List of sophisticated equipment :

The laboratories are well equipped with sophisticated facilities like GC, U.V. Spectrophoto meter, Scanning electron Microscope, Arnino acid analyser, HPLC, Radiation facilities, Electro antennograph etc.

R & D Manpower

	Qualification	Full time
Science & Technical	Doctorates/ Post Graduates	116
Social Sciences & Others	In the relavent subjects	33

Library facility

Total annual budget	:	Rs. 14.00 lakhs per annum
Total No. of Books	:	2,623
i) No. of Journals Renewed for the eyar 1990.	:	70
ii) New Journals subscribed	:	103
Total No. of Bulletins	:	6
Total No. of News letters	:	6
Xerox facility		
DTP facility		
Microfile Reading facility		
Inter library lending facility.		

Major achievement claimed

Few of the important contributions of the Institute during last 13 years are briefly indicated.

- Evolved 'DD' variety of mulberry which gives 15% additional yield than M-5 and best suited both for irrigated and semiirrigated conditions. Nutritional contents are also good.
- Evolved Control measures from Stem Canker disease of mulberry, which prevents affecting cut ends and stems of newly planted cuttings at field and also in the nursery and after pruning the plants.
- Evolved technology of chawki garden management with 12 crops system per annum for commercial Chawki Rearing Centres.
- Evolved two hardy bivoltine silkworm races, namely, 'SP' and 'NP' which have given average yield of over 50 kgs against existing 35-40 kgs of CB, with 7 renditta and 22% of silk content. Some farmers harvested more than 70 kgs for 100 Dfls at field test level.
- Standardised cold/hot acid treatment for popular bivoltine silkworm races and its hybrids at different hours of oviposition.
- Evolved Chawki Box (Isolation Chamber) for rearing young age silkworms for uniform and faster growth of chawki worms. It avoids contamination of diseases.
- Evolved shoot rearing technology which saves 50% labour, ensures higher rearing capacity through better leaf utilization and 8-10 kg higher yield of good quality cocoons.
- Evolved two bed disinfectants, namely 'Sanjeevini' for the control of Grasserie and Flacherie and 'Suraksha' for the control of muscardine diseases, which ensures higher yield of 5-10 kgs per 100 Dfls and with investment of Rs. 50/- per 100 Dfls, income ranging between Rs. 500-1000 could be generated. Both the powders are in great demand. Further a chemical formulation for control of uzifly a serious pest of silkworm is also developed.
- Evolved water softening chemical formulations for improving reeling water, which helps the reeler in getting more silk production with improved quality of silk.

Apart from above, the Institute has evolved innovations/technologies like, Black box for silkworm eggs, egg carrying box, negative staining for pebrine spore identification, leaf chopping machine, multi-purpose pump, denier indicator device and cut cocoon spinning wheel.

In addition, the Institute is offering following services to farmers/reelers/weavers of the industry.

- Testing of mulberry garden soils and recommending corrective measures and fertilizer recommendation.
- Production and supply of bio-fertilizer.
- Maintenance of nucleus stock (P4) and supply of P3 layings (both bivoltines and multivoltines) to the Department of Sericulture, Government of Karnataka.
- Collection, testing and recommending corrective measures of reeling water.
- Testing various dyes and dye properties on fabric.
- Testing leaf, larvae and cocoon samples of farmers and suggesting suitable measures/remedy.

- Imparting Refresher/Intensive training to the extension staff of the Department of Sericulture, GOK, Entrepreneurs, students and teachers of educational institutions and NCERT programme etc.
- Conducting Seminars, Workshops, Field Days etc., in co-ordination with Department of Sericulture, GOK, for proper transfer of technology and creating awareness of latest technology among farmers.
- Technologies developed and transferred for ups calling/ commercialisation.
 - Denier indicator device
 - Isolation box
 - Egg carrying box
 - Multi purpose pump
 - Leaf chopping machine
 - Cut cocoon spinning wheel
 - Water softening technologies
- Technologies developed and ready for upscaling.
 1. Water treatment for wet processing of silk.
 2. Chemical formulation for control of uzifly a pest on silk worm.
 3. Single feeding per day for silk worm chawki worms.
 4. Cocoon boiling machine.

Name and Designation of five Researchers

- Dr. S.B. Dandin, Director
- Dr. R. Raghuraman, Chief, Sericulture Division
- Dr. U.D. Bongale, Chief, Moriculture Division
- Sri V.G. Halliyal, Chief, Silk Technology Division
- Dr. B.M. Sekarappa, Scientific Officer-I

KERALA FOREST RESEARCH INSTITUTE

Address

Kerala Forest Research
Institute, Peechi, Trichur(Dt.)
Kerala — 680 653.

Income and R & D expenditure:

	1992-93	1993-94	(Rs. in lakhs)	1994-95
<i>Income</i>				
Donations received	Nil	Nil		Nil
Grants Received	193.16	213.68		215.05
Other income	3.67	4.61		4.36
<i>Expenditure on R & D</i>				
● Capital	44.84	31.58		34.98
● Recurring	169.28	221.54		218.47

Infrastructural facilities

Land & Building : Area: 71.529 HTR;
Value: Rs. 135.40 Lakhs

Equipment facilities : Gross Value: 19.93 Lakhs

List of sophisticated equipment :

- Automatic Weather Station
- Topcorn Survey Instrument
- Digital Luumeter
- Glass-100 Laminar Airwork Station
- Odometer
- Relayscope
- Self Recording Rainuage
- Quantum/Radiometer
- Image Processing System
- Humidity Temperature control Cabinet
- Digital Area Line Meter
- Roll to Roll electronic Laminator

R & D Manpower:

	Qualification	Full time
Scientific & Technical	Ph.D	32
Social Sciences & Others	Post Graduates	17

Library facilities

: Books 15000; Back Volumes 8000;
Reprints 7000; Current Subscriptions
100; 2 Computers, PC, 386, 300 MB.
DTP facility with Laser Printer
available (D-ROM technology
introduced. E Mail also available.
Photocopying machines and Microfilm
Reader printer is available.

Major achievements claimed :

- Technologies developed and transferred for upscaling/ commercialisation : Preservative treatment of Rubber wood for better end uses.

- Technologies developed and ready for spscaling : (i) Quality improvement of cane for better furniture
(ii) Vegetative propagation of bamboos and canes.
- New Techniques/methodologies developed and implemented : Control of termites in eucalyptus plantations.
- Research papers/Reports Published : 275/108
- Seminars/Conferences organised/attended : Over 300 seminars attended by scientist from different disciplines; 2 International Seminars organised.
- Any other : International Group meetings and several interaction meetings conducted.

Name and Designation of five Senior Researchers :

- Dr. K.S.S. Nair, Director
- Dr. J.K. Sharma, Scientist-in-charge, Pathology Divn.
- Dr. R. Gnanaharan, Scientist-in-charge, Statistics Divn.
- Dr. K. Jayaraman, Scientist-in-charge, Statistics Divn.
- Dr. Jose Kallarackal, Scientists-in-charge, Plant Physiology Divn.

KJP RESEARCH FOUNDATION

Address

Malabar Cashewnuts and Allied Products, Door No. 7/85,
Kanyakumari Distt.,
Tamil Nadu-629 166.

Background :

- Status of the SIRO** : KJP Research Foundation is a Non Government Organisation registered under the Tamil Nadu Societies Registration Act.
- Year of establishment** : June 1991.
- Major objectives** :
- To establish a Centre of Excellence in basic and applied research on some important plantation and horticultural crops having export potential and to serve as resource house for agro based industries.
 - To develop bio-techniques including tissue culture and genetic engineering for increasing the productivity of these crops.
 - To develop proper pre-and post harvest techniques.
 - To train persons including farmers and trainers.
 - To work in close collaboration with various Universities, Societies, Institutions-national & International-engaged in pursuit of all or any of the above objectives and to seek recognition from University or Universities.
 - To organise regular symposia, workshops, seminars etc.
 - To establish and run an Information and Communication Centre.
 - To institute fellowships, Scholarships, Awards etc.
 - To undertake Studies and Consultancy Services for Public and Private Sectors, and
 - To do all such things and perform all such acts as may be necessary or appropriate for the achievement of any or all of the above objectives.
- Major research areas** : Basic and applied research on some important plantation and horticultural crops having export potential with particular reference to Cashew, Pine apple, Mango and Orchids giving emphasis to biotechnology, post harvest technology etc.

Year of initial recognition by DSIR : April, 1992

Income and R & D expenditure :

		(Rs. in lakhs)		
		1992-93	1993-94	1994-95
Income				
Donations received	:	—	4.40	1.78
Grants Received	:	0.30	—	3.48
Advance Received	:	9.45	—	3.88
Other income	:	0.15	4.14	
Expenditure on R & D				
• Capital	:	2.14	2.42	0.12
• Recurring	:	4.41	8.42	8.80

Infrastructural facilities :

Land : Value : Rs. 2-4 Lakh; Area : 12 acre

Building : Administrative Office & Lab. (Rented building)

Equipment facilities : Gross value: Rs. 3.0 Lakhs

List of equipment:

- Autoclave (Electric)
- Incubator
- Laminarflow chamber

R&D Manpower :

Library facilities : A small library consisting of reference books and journals is maintained. Additions are made every year to the stock. Facilities at the Universities and other libraries are made use of.

Major activities claimed :

i) Developing major activities of the foundation include :

Cashew Apple Products

Health Drinks

Value added Cashewnut Products.

Technology for preparing Cashew fruit based products have been developed. Technology for Cashew Fruit Squash has been transferred to M/s. PACE International Ltd., Quilon, Kerala for commercialisation. Technology for producing tissue culture plants of the medicinal plant Kaemoferia has also been developed. This technology is ready for commercialisation.

ii) Micro Propagation of Plants

Micro Propagation techniques for orchids, Anthuriums and medicinal plants have been developed. Seed and tissue culture plantlets of these plants are on sale now.

iii) Hybridisation

Hybridisation of Orchids has been done to evolve showy varieties. Some promising varieties are under evaluation.

iv) Germ Plasm Collection

A Germ Plasm Collection of Cashew has been established at Panagudi in Thirunelveli Distt., of Tamil Nadu. At present there are more than 20 Indian & Exotic varieties/types in the collection.

v) Extension and Development

1. *Cashew Farmers' Association.*

A Cashew Farmers' Association has been formed at Panagudi to introduce improved Cashew Farming techniques with particular reference to production, productivity, quality and marketing among its members. Seminars, classes, exhibitions, farm visits etc. have been conducted to transfer new technology to the members of the Association.

2. *Publications:*

Books

- A Farmers' Primer on Growing Cashew-1992.
- Cashew in 21st Century-1994. Proceedings of the Seminar conducted in 1993.
- Cashew Industry-1195. Proceedings of the Seminar Conducted in Dec. 1994.

vi) Seminars organised:

- 1) A Seminar on "Cashew in 21st Century-Problems and Prospects for India" was held at Trivandrum on 5th Oct. 1993. This Seminar was co-sponsored by the State Committee on Science, Technology & Environment, Government of Kerala.
- 2) A Group Seminar on "Cashew Industry" Co-sponsored by the Cashew Export Promotion Council of India was held on 5th Dec. 1994 at Quilon. Scientists, Extension Workers, Cashewnut Producers, Processors, Exporters, Traders etc. from seven Foreign Countries and India participated in the Seminar.
- 3) A three day exhibition-cum-sales entitled "Better Farm & Home-95" was conducted at Trivandrum in Sept. 1994.
- 4) Farmers Seminars in 1993-94. organised at the farm in Tirunel Distt. Tamil Nadu.

vii) Supply & Services

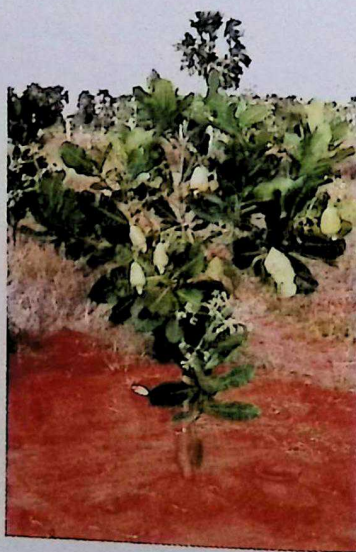
A Cashew Nursery has been established at Mylom, Trivandrum. High Quality Cashew Grafts of improved varieties are sold to individual farmers and Plantation Companies.

viii) Consultancy

- 1) The Foundation operates a Consultancy Service on Production, Processing and Quality Control of Cashewnut and Cashew fruit and on Human resource development.
- 2) The Foundation has taken up Consultancy on Quality Control for :
 - Malabar Cashewnuts & Allied Products.
 - Saraswathi Industries (Export) Ltd.
- 3) Consultancy on Human Resource development for: Inter Cooperation, Kerala (A Swiss Government Supported Programme.)

Name and Designation of Senior Researchers

- Dr. A.G.G. Menon, Director
- Dr. (Mrs.) P. Shanta Kelath, Hon. Scientist.
- Sri. C. Prakash, Biotechnologist.



An exotic two year old bearing Cashew seedling plant from the Cashew Germ Plasm

LPG EQUIPMENT RESEARCH CENTRE

Background

Address
Opp. ITI Main Gate,
Old Madras Road
Doorvaninagar Post
Bangalore-560 016.

- (i) LPG Equipment Research Centre (LERC) was set up in April 1990 at Bangalore by Indian Oil Corporation Limited (IOC), Hindustan Petroleum Corporation Limited (HPC), and Bharat Petroleum Corporation Limited (BPC) to conduct research and development work relevant to LPG Industry. LERC is registered as a society under the Karnataka Societies registration act 1960 at Bangalore. The Bureau of Indian Standards, Government of India has included LERC in the list of recognised testing centres for testing of LPG rubber tubes as per IS 10908.
- (ii) LERC is a quality control centre for cylinders, valves and regulators used by LPG Industry. It conducts failure analysis where LPG cylinders are involved in accidents. LERC conducts studies on the problems faced by LPG Industry and has prepared a paper for an ideal manufacturing process to be followed by cylinder manufacturers, a process for retrieving the valves considered unusable in LPG plants and an alternate painting process for LPG cylinders. Besides these routine, LERC undertakes research work on improving the equipment quality/replacements for better safety & economy. Some of the activities and achievements of LPG Equipment Research Centre since its inception are given below:

Initial recognised by DSIR : 1993

Income and R & D expenditure

	(Rs. in lakhs)		
<i>Income</i>	<i>1992-93</i>	<i>1993-94</i>	<i>1994-95</i>
Donations Received	Nil	Nil	Nil
Grants Received	Nil	Nil	Nil

Other income	15.85	25.91	31.00
(from IOC/BPC/HPC)			
<i>Expenditure on R&D</i>			
● Capital	57.63	12.10	12.00
● Recurring:	15.85	25.91	31.00

Infrastructural facilities:

Land & Building : Area of Lease Hold Land : 7 Acres
value of Building : Rs. 235 Lakhs

Equipment facilities : Gross Value: Rs. 130 Lakhs

List of sophisticated equipment

GAS Chromatograph

Rubber Testing Equipment

IR Spectrophotometer

Ozone Cabinet

Universal Testing Machine

Regulator & Valve Test Benches:

Computers

R&D Manpower

	Qualification	Full time
Scientific & Technical	Engineering	8
Social Sciences and Others		4

Library facilities : Mechanical & Chemical Engineering & Basic Sciences, Electronics, Polymer Science

Major achievements claimed:

LERC has undertaken various projects to enhance the safety of the customers using LPG and development of systems for effective functioning and improved productivity in the marketing of LPG. The major achievements are listed below:

LPG RUBBER HOSE:

Majority of the accidents in LPG installation were attributed to the failure of rubber tubing, the weakest link between the cylinder and stove of a LPG installation. Rubber Hose with the following construction has been developed as a better alternative to the rubber tubing:

- Inner Lining : Nitrile rubber compound
- Reinforcement : MS wire braiding
- Outer Cover : Neoprene rubber compound

The hose has the following distinct advantages over the present rubber tubing:

- Resistant to LPG and hence long life
- Resistant to rodent attack
- Leak Proof

- Fire Resistant
- Service life more than ten years

The bulk trials of the hose at customers premises has proved the above facts and hence is being commercialised. Usage of this hose will enhance the safety of the LPG customers.

● VALVE/O RING LEAK DETECTOR :

This device was developed to check and ensure the LPG cylinders before delivering the same at the customers premises. This is a portable device which can be used to detect leaks if any in the cylinders. Though the cylinders are inspected thoroughly at the bottling plants, to doubly ensure the safety of the customers the cylinders will be rechecked before delivery. The device is incorporated with a piston arrangement to develop an airpressure for checking. This can find out both the leak due to the damaged O ring in the cylinder as well as the leak due to the failure in the valve.

- Patent obtained for valve 'O' Ring leak Detector.

The main features of the device are as follows:

- Portable
- Simple to operate
- Can detect both the leaks as mentioned above
- safety at the customers premises ensured.

The design of the device has been patented.

● GADGET FOR MEASURING DENSITY OF LPG:

Liquified Petroleum Gas under pressure is in liquied state and presently there is no system of checking the density of liquid LPG, as conventional density measurement is not possible. They have developed a Poly Acrylic container within which a hydrometer is enclosed for direct reading of the density of LPG. The LPG sample can be collected into the sealed container and the direct reading of the density can be observed from the hydrometer. This will be useful in accurate stock accounting of LPG, for checking the impurities in LPG and the quality of the product. The design of this gadget has been patented and a piece each is being given to all the Oil Industry LPG locations.

INDIGENOUS MATERIAL FOR SAFETY CAPS:

Presently the safety cap of the cylinder valve is made out of Delrin (Poly Acetal), which is an imported material. Inspite of using a costly material, the caps deteriorate faster and hence leads to frequent replacements. We have made an indepth analysis and identified "Glass Filled Polypropylene" as the cost effective improved alternative for Poly Acetal. Bulk trials have been completed and the project is in implementation stage. Apart from the usage of Indigenous material the savings to the Industry will be over Rs. 1.0 Crore.

● DEVELOPMENT OF RUBBER COMPONENTS:

Detailed failure analysis of the valves of cylinders attribute to the substandard quality of the rubber components used in the valves. To overcome this they have developed compounds meeting stringent specification like Compression set, Tensile properties, rebound resilience,

Resistance to LPG, Low Temp. Flexibility etc. Components made out of this compound will perform for a longer period thereby enhancing the safety of the customers using the equipment. Also we have developed compound for rubber components used at bottling plants to reduce machine down time and increase production.

● **GAS LEVEL INDICATORS:**

Presently there is no system available for knowing the level of LPG in the cylinders. In association with M/s. Hallicrest, USA they have developed a Liquid crystal based Gas Level Indicator for use in Indian kitchens, which can effectively indicate the level of LPG in the cylinders so that the users can book for their refill on time.

Name and Designation of Senior Researchers

- M.S.C. Rao, Deputy General Manager (Research)
- S. Shankar, Manager (Research)
- Rajeev Hagargi, Sr. Research Officer
- S.M. Venugopal, Sr. Research Officer
- R. Rajakumar, Research Officer



Profile Projector

MAHARASHTRA ASSOCIATION FOR THE CULTIVATION OF SCIENCE

Address
Gopal Ganesh Agarkar Road,
Pune-411 004.

Background

Status of the SIRO : Autonomous Institution

Year of establishment : 1946

Major objectives :

- (i) Promotion of science & technology and their practical applications to problems of social relevance and national welfare;
- (ii) Maintaining the institute for promotion of science & technology and their practical applications of social relevance and national welfare.
- (iii) Publication of scientific books, monographs, journals.
- (iv) Promotion and popularization of science & disseminating knowledge of pure and applied science and by organising conferences, symposia, seminars, workshops, lectures, exhibitions, etc.

Taking such other steps as may appear necessary and desirable for the furtherance of scientific research and its application.

Major research areas : (i) Microbial Sciences
(ii) Plant sciences
(iii) Animal Sciences

Date of initial recognition by DSIR : April, 1988

Income and R & D expenditure:

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
Income			
Donations received	0.26	0.26	0.25
Grants received	149.00	193.00	234.00
Other income	19.08	15.14	16.89
Expenditure on R&D			
• Capital	52.42	67.60	75.70
• Recurring	127.31	133.76	166.85

Infrastructural facilities:

Land & Building : Area Land 18,324.10 sq. mtrs.
Bldg. : 9,431.56 sq. mtrs.

Equipment facilities : Gross value ; Rs. 283.09 Lakhs

List of Sophisticated equipment :

- Scanning Electron Microscope
- N.M.R. Spectrometer (Micro-processor controlled) for scanning of PMR spectra of organic compounds with facility for double irradiation;
- Pilot fermenter;
- Ultra-Centrifuge
- Spectrophotometer with digital plotter;
- Spectrophotometer, UV-VHS with gel scanner and gel dryer;
- NMR Analyzer
- Kjeltex Auto Analyzer for Automatic microlevel protein estimation;

R & D Manpower

-Scientific & Technical
Ministerial & Class IV

Full time

93

83

Major achievements claimed

- Technologies developed and transferred for upscaling/commercialisation

- : (i) Aerobic microbial treatment of dyestuff waste water.
- (ii) Microbial process for removal of chromium from waste water
- (iii) Process for production of Vitamin B₁₂ from anaerobic methanogens

- Research papers/reports published

: 29

- Seminars/conferences organized :

- (i) 2 March 95, "Industrial water pollution in Pune metropolitan area - problems & solutions" (Seminar)
- (ii) 12-25 March 95, "Metal-Microbe Interactions and their applications." International workshop sponsored by United Nations Environment Programme (UNEP)

Name and Designation of five Senior Researchers :

- Dr. A.D. Agate, Director, A.R.I.
- Dr. R.M. Badve, Sc. E1, A.R.I.
- Dr. (Mrs.) P.P. Kanekar, Sc. E1, A.R.I.
- Dr. A.M. Mujumdar, Sc. E1, A.R.I.
- Dr. (Mrs.) Shobha Raq, Sc. E1, A.R.I.

MANGALORE UNIVERSITY

Background:

University established by the Karnataka State Universities Act on 10.9.1990.

Income and R & D expenditure:

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donations Received	Nil	Nil	Nil
Grants Received	351.88	510.76	510.96
Non-Plan	253.88	337.76	375.96
Plan	98	173.00	135.00
Other Income	192.29	183.09	185.54
<i>Expenditure on R&D</i>			
● Capital	92.64	13.75	144.46
● Recurring	362.06	456.70	567.48

Infrastructural facilities:

Land & Building : Land Area: : 308 acres:
Value : Rs. 15 crores.

Equipment facilities : Gross Value: Rs. 150 Lakhs.

List of sophisticated equipments:

The laboratories of various departments are well equipped with sophisticated facilities like Trinocular research microscope, UV-VIS spectrophotometer, Plant efficiency analyser, optical photograph, electro analyser, Polarograph, Flame Photometer, Petontiosate & a host of other equipments.

R&D Manpower :

	Qualification	Full Time
Scientific & Technical	Doctorates	51
Social Sciences & Others	Doctorates	28

Major achievements claimed :

- *Technologies developed & transferred for upscaling/ commercialisation :*

Standardisation of a procedure for Identification in Biological samples in applied geology.

- *Technologies developed and ready for upscaling :*

Application of Radio telemetric device for study on Ecology of endangered tutorials in applied geology.

- **Research papers/Reports Published :**

Chemistry-300; Statistics - 2, Bio-Sciences - 250; Material science - 14; Mathematics - 10; Applied Botany - 50; Applied zoology - 30; Physics - 44; Marine Geology - 30

- **Seminars/Conferences attended/organised :**

- Organised DST sponsored workshops, Winter Schools in Chemistry, UGC Refresher Course, workshop by IANCAS, Bombay (Chemistry);
- Organised 2 UGC sponsored Refresher course, a National Symposium on Environmental Biology, Orientation course & seminar on Ecology & Env't., of Western Ghats.

Address
Mangalore University,
Mangalagangothri,
KONAJE - 574 199.

- (iii) 3 Seminar/Conferences attended/organised; in the subject of material science;
- (iv) 1 Seminar/Conf. attended/organised in the subject of Computer Science.
- (v) 10 Semi/Conf attend/organi. in the subject of applied of Physics.
- (vi) 23 Semi/Conf. attend/organi. in the subject of applied of Physics.
- (vii) Organised 14 attended 3 Seminar/Conf. under the facility of applied Zoology.
- (viii) Organised 2 seminars under the facility of marine geology.

● **Awards Won**

- (a) Prof. B. Thimme Gowda awarded Alexander Von Humboldt Research fellowship.
- (b) Prof. B. Shivarama Holla was Awarded Sunny Research foundation fellowship.
- (c) Dr. S.L. Belggali was awarded Govt. Congress Fellowship.
- (d) Undertaking Award rejects financial by National & International Agencies under the faculty of Applied Botony.

Name and Designation of Senior Researchers :

- Dr. B. Thimma Gowda, Professor
- Dr. M. Jayarana Hegde Professor
- Dr. B.G. Shenoy, Professor
- Dr. K. K. Achary, Professor
- Dr. J. Uchi, Professor
- Dr. Prakash Karat, Professor

MARATHE RESEARCH FOUNDATION

Address
Nandan Enclave,
Shri Govindraoji Marathe Road,
Miraj-416 410.

Background

- Status of the SIRO** : Public Trust registered under The Bombay Public Trust Act, Registration No. E-337, Sangli.
- Year of establishment** : 1973
- Mojoir objectives** : Advancement of Scientific and Industrial Research in various fields.
- Major research areas** : Textiles, Replenisable Energy through Arboriculture, Electronics, Chemical, Electrical Engineering
- Initial recognition by DSIR** : January, 1998

Income and R & D expenditure

		(Rs. in lakhs)		
<i>Income</i>	:	1992-93	1993-94	1994-95
Donations Received	:	4.00	—	—
Grants Received	:	—	—	—
Other income	:	1.98	2.49	2.35
(Interest and Royalty)				
<i>Expenditure on R&D</i>				
● Capital	:	2.48	2.78	0.91
● Recurring	:	1.82	2.05	2.12

Infrastructural facilities:

- Land & Building** :
- i) Plot No. C-3, Industrial Estate, Miraj. Area of the plot 473.97 sq mtr.
 - ii) Plot No. B-3, M.I.D.C. Area, Miraj Total Area 15834 sq. mtr.
 - iii) Research Farm at Savli Village 54 Acres 27 Gunthas.
- Equipment facilities** : Depreciate value : Rs. 1.83 lakhs

List of sophisticated equipment arrange as:

- Microscope,
- Visco Meter
- Spectrophotometer,
- Humilab Unit,
- Fibre Tow Cutting Machine,
- Seed Selector Unit,
- Chemical Research Chamber,
- Agricultural Equipment,
- Water Supply system in Research Farm etc.

R&D Manpower:

Qualification	Full time	Others
Scientific & Technical		
Post Graduates		
Graduates	3	
Others	1	
	4	10

Major achievements claimed

- Technologies developed and transferred for unscaling/commercialisation
- (i) Phase Failure Relay:
This relay protects the total Electrical Installation of Electric Motor or the Installation of Transformer from Phase Failure on LT as well as HT side. Upto 20 Amps. and above 20 Amps. with suitable contactor or starter.
- (ii) Neutral Failure Relay $\pm$ Earth Leakage Circuit Breaker/Residual Current Circuit Breaker:
In this product, incoming neutral failure is sensed and trips the load automatically through ELCB/RCCB. But consumer has to attend this switchgear when healthy neutral resumes and switch 'on' the ELCB/RCCB. Advantage of this is protection from 'Incoming neutral failure', 'Earth leakage' in the installation. This protection can be given in single phase installation or 3 phase 4 wire installation also.
- (iii) Neutral Failure Relay $\pm$ Earth Leakage Miniature Circuit Breaker:
In this product also all above protections are given, in addition 'Overcurrent' and 'Short Circuit Protection'. Switching 'on' manual and 'off' automatic.
- (iv) Neutral Failure Relay $\pm$ Miniature Circuit Breaker:
In this product 'Neutral Failure' protection, 'Overcurrent' and 'Short Circuit' protection is achieved. Switching 'on' manual and 'off' automatic.
- (v) Bapat Earth Leakage Tester (Belt):
At present leakage in the Electrical Installation is being tested by 'Meggers' or 'Insulation Tester'. These are hand driven equipments from which leakage to earth is measured. This is used when supply is made 'off'.
- (vi) Electrical Energy Saving Equipment:
At present, power factor of the electrical equipment is improved by way of connecting capacitors through manual means, semi-automatic means or fully automatic means i.e. through capacitors and switchgears. Our new development includes fully automatic equipment but main advantage is that, the equipment don't require any capacitor. Induction 3 phase motors are controlled individually according to driving load and power factor is maintained in satisfactory limit. This is most useful for the motors having fluctuating loads.
- (vii) Replenishable sources of Energy:
Sticking to its long held view that in India the best utilization of solar energy lies in large scale plantations and trying to demonstrate the idea for an arid-zone plantation 25 acres of subabul (koo-babul) Hawaiian Giants (*Leucaena Leucocephala*) have been planted and the growth monitoring continued during the last three years.

(viii) Bapat Automobile Speed System (Bass):

Limiting the maximum vehicle speed in order to enhance safety and fuel economy of diesel vehicles. System is being modified and suitable for electrical operation as well as pneumatic and hydraulic type.

(ix) Threshold Relay TMP-7000/TMP-8000:

These systems not only have optimum in built protections against Overload, Single Phasing, Short Circuit/Instantaneous Overload, Earth Fault and Excess Temperature (optional) but also indicate the cause of tripping, thereby rendering the fault locating and rectification process extremely easy.

(x) Elmoshield:

One single unit protects the motor from:

Single Phasing

Mechanical Overload

Electrical Overload

Under Voltage etc. Instantaneously

(xi) Threshold Relay (Further Refinement)

An Electronic device for protecting electrical induction motor (only upto 20 H.P.) from electrical damage.

(xii) Neutral Failure Relay:

Protection of electrical installations from abnormal voltages resulting from displacement of neutral in 3 phase 4 wire installation.

(xiii) Time Switch:

Time Switch is designed with modern microprocessor based technology.

It is provided with in-built battery back-up facility which preserves in its memory the set timings till the resumption of supply. As the time switch is incorporated with microprocessor based technology, it has got very less consumption which insures very long battery life (750 hours). It is provided with the 'COMPANSATION' facilities in case of power failures, so it will ensure the exact No. of pumping hours irrespective of repeated power failure.

It is incorporated with bright digital display with the help of which following can be displayed

- | | |
|----------|------------------|
| 1) RTC | 5) DUR-2 |
| 2) PR-1 | 6) LOAD |
| 3) DUR-1 | 7) UNDER VOLTAGE |
| 4) PR-2 | 8) OVER VOLTAGE |

It is incorporated with following protection facilities.

- | | |
|--------------------|-----------------|
| 1) Single Phasing | 4) Over Voltage |
| 2) Reverse Phasing | 5) Over Load |
| 3) Under Voltage | 6) Dry Run |

Time-switch not only trips the pumpset but indicates the cause of tripping also L.E.D. indicator of every fault individually.

In short, Time Switch ensures you accurate, reliable and trouble free performance over long period of time with many additional facilities mentioned earlier.

(xiv) Threshold Relay TMP-7000/8000/9000:

It is comprehensive electrical motor protection system. It protects the motor from overload, single phasing, short circuit, Inst. Overload, earth fault, excess temperature. It not only trips the motor under fault condition but also indicates the cause of tripping of the motor with the help of bright LED.

- Patent filed : 5
- Awards won
 - (i) On 16th June, 1980 our invention 'Bapat Automobile Speed System' won the Late G.S. Parkhe Industrial Merit Prize for the year 1980.
 - (ii) On 16th June, 1989 our invention 'Neutral Failure Relay' won the late G.S. Parkhe Industrial Merit prize for the year 1989.
 - (iii) On 26th January, 1988 the 'Martex' Threshold Relay TMP-1 earned for the inventors, Shri A.B. Marathe and Shri B.S. Bapat a cash prize of Rs. 5,000/- each from National Research and Development Corporation of India (NRDC).
 - (iv) On 15th August, 1988 World Intellectual Property Organisation (WIPO) an agency of U.N.O. awarded the Gold Medal for the year 1988 to Shri A.B. Marathe and Shri B.S. Bapat for the invention 'Martex' Threshold Relay. Above products had already won Late G.S. Parkhe Award in 1984.

MATERIALS RESEARCH SOCIETY OF INDIA

Address
 Co. Defence Metallurgical
 Research Laboratory
 P.O. Kanchanbagh
 Hyderabad - 500 058.

Background

Status

: Interdisciplinary Professional Society.

Year of establishment

: 1989

Major objectives

: (i) To promote active interactions among scientists, technologists, engineers and others engaged in basic or applied research, technology development and transfer, applications and innovations related to structural and functional materials, based on metals, alloys, ceramics, polymers, fibres and composite, as well as those derived from living and non-living natural resources.

(ii) To encourage wide ranging applications of such materials in all areas of vital interest to human society such as agriculture, food, health clothing, energy, water, housing and construction, communications, transport, service instruments and controls, consumer goods industry, national security, sports, ecology, environment, safety and thus contribute to societal well being and prosperity.

(iii) To undertake as well as actively support research and development and innovations in materials.

(iv) To establish information banks and disseminate knowledge on materials through education, training courses, workshops, seminars, symposia, visits, lectures, publications, films and other appropriate means.

(v) To foster excellence and creativity and provide recognition of significant contributions of individuals, groups and organisations in materials research and their applications.

(vi) To provide a professional forum for discussion of major issues related to materials such as their economic exploitation, long term conservation, new developments and imaginative uses.

(vii) To establish or cause to be established national and regional facilities and test centres for research and evaluation of materials and for evolving newer methods of quality

assurance for reliability, reproducibility and long term performance and thereby evolve national standards for materials.

(viii) To promote wide public interest in materials developments and their potential and in formulation of policies and novel measures appropriate to investments in research, development and exploitation of advances in science and technology of materials for national goals of self-reliance, economic growth and development and exports.

(ix) To encourage interactions and cooperation internationally with other societies and organisations engaged in furtherance of materials research, development and application.

(x) To take appropriate measures to mobilise intellectual and other resources in all possible manner towards fulfilment of these objectives.

Initial recognition by DSIR : Sept., 1991

Income and R & D expenditure

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations Received	Nil	Nil	Nil
Grants received	1.15	1.00	—
Other income	1.70	1.58	1.60
<i>Expenditure on R & D</i>			
• Capital	Nil	Nil	Nil
• Recurring	Nil	Nil	Nil
Seminars	—	—	0.10
AGM	1.29	1.52	5.76
Publications	0.57	0.56	0.63

Infrastructural facilities

Land & Building

: MRSI has been allocated space in Ceramics Building of the Defence Metallurgical Research Laboratory, P.O. Kanchanbagh, Hyderabad 500 058.

Equipment facilities

: Gross Value : Rs. 1.10 lakhs.

List of sophisticated equipment :

Laster Printer

Office Furniture & Telephone

One P.C. Provided by DMRL

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical	Graduates	1	1
Social Sciences & Others	Graduates	—	1

Major achievements claimed

Research papers/Reports Published: MRSI is publishing a journal entitled 'Bulletin of Material Science', which will be published once in 3 months by Indian Academy of Sciences, and is also co-sponsored by the Indian National Science Academy.

MRSI is also publishing another journal entitled 'MRSI Newsletter'.

As a joint publication with DMRL, Hyderabad a newsletter entitled 'Advanced Composites Newsletter' which has been brought out in August 1992 is also a publication of MRSI. Another Quarterly Newsletter entitled 'Non-ferrous Materials Newsletter' was started as a joint publication of TIFAC, New Delhi & DMRL Hyderabad.

Seminars/Conferences attended/organised : The 6th AGM of MRSI was held at the Indian Institute of Technology, Kharagpur from February 8 to 10, 1995.

The 5th AGM of MRSI was held at the Research Centre Imarat, Hyderabad from February 7 to 9, 1994.

The 4th AGM of MRSI was held at the Regional Research Laboratory, Thiruvananthapuram from February 9 to 11, 1993.

Name and Designation and Address of Senior Researchers

- Prof. S.K. Joshi, President
MRSI & Sarbhai Research Professor, Jawaharlal Nehru Centre for Advanced Scientific Research, National Physical Labs. Campus, Dr. K.S. Krishnan Marg, New Delhi-110012
- Dr. R. Chidambaram, Vice President MRSI & Chairman, Atomic Energy Commission & Secretary, Department of Atomic Energy, Chatrapati Shivaji Maharaj Marg, Anushakti Bhavan, Bombay-400039
- Dr. R. A. Mashelkar, Vice President MRSI & Secretary DSIR & Director General, Council of Scientific & Industrial Research, Anusandhan, New Delhi-110001
- Prof. S. Ranganathan, Vice President MRSI & Professor, Centre for Advanced Study, Department of Metallurgy, Indian Institute of Science, Bangalore-460012
- Dr. S. Varadarajan, Vice President MRSI & Chairman, Indian Vaccine Corporation Ltd., 2, Ring Road, Kilokri, Opp. Maharani Bagh, New Delhi - 110014

M.L. SHAH RESEARCH FOUNDATION FOR STONE INDUSTRIES.

Address

Noble 'A', 3rd Floor,
Ashram Road,
Opp. Nehru Bridge,
Ahmedabad - 380 009.

Background

Major research areas : Related to decorative Stone Industry.

Income and R & D expenditure

Income	1992-93	1993-94	(Rs. in lakhs) 1994-95
Donations Received	Nil	Nil	Nil
Grants Received	Nil	Nil	Nil
Other Income	0.67	0.87	0.87
Expenditure on R&D			
• Capital	Nil	Nil	Nil
• Recurring	0.62	0.82	0.69

Infrastructural facilities

Land & Building:	Area	: 764.96 sq.m. & 172.89 sq.m.
	Value	: Rs. 5.00 Lakhs
Equipment facilities:	Gross Value	: Rs. 1.47 Lakhs

Major achievements claimed

(i) Nandurbar area, Dhule District., Maharashtra:

In the area around Nandurbar, there are a number of large dolerite dykes that have been located. In many of these dykes the joint patterns are such that there is a possibility of getting sufficiently large size blocks for the production of polished random slabs and tiles. The colour of these dolerites, which are normally sold as 'Black Granites', is not yet black but is dark greenish black. The western extension of one such dyke is also encountered in Gujarat State, east of Surat, at Vyara. One party has already started exploratory mining of the rock at Vyara.

(ii) Sawantwadi area, Sindudurg District, Maharashtra:

A large amount of investigation has been carried out in the area around Sawantwadi. This area is very promising as a number of varieties of granites are available around this area. A large body of 'Pink Granite' which is a normal alkali granite has been located and again one party has started exploratory mining of the same. Also a body of 'Black Granite' has been located. More detailed investigation is being continued in order to establish its economic potential.

(iii) Babra area, Amreli District, Gujarat:

In this area a number of dolerite dykes have been identified as potential source of 'Black Granite'. In some of the portions of these dykes the joint pattern is quite suitable in order to get sufficiently large size blocks of the rock. The colour of the rock is not yet black but is dark grayish black and quite suitable for making polished random slabs and tiles. Some amount of exploratory mining has also been started in this area.

In addition to the above described three areas where detailed investigations have been undertaken, large number of samples used in the industry have also been tested for the various physical properties and petrographic and mineralogical studies under the microscope.

Name and Designation of Senior Researchers:

- Prof. Dr. K.B. Powar, Secretary General,
Association of Indian Universities,
5th Floor, AIU House, 16, Kotla Marg,
New Dehi - 110 002.
- Prof. N.M. Vashi, Department of Geology,
MS. University of Baroda, Vadodara,
Prof. S. F. Sethna, Dept. of Geology,
St. Xavier's College, Bombay - 400 001.

104185

NATIONAL ACADEMY OF SCIENCES, INDIA

Address

5, Lajpatrai Road, New Katra,
Allahabad - 211002.

Background

: Autonomous Institution, functioning as the oldest Science Academy of the country.

Year of establishment

: 1930

Major objectives

: (i) To provide a national forum for the publication of research work,
(ii) To provide opportunities for exchange of views among scientists and to promote and popularize science and scientific temper in the country.

Major research Area

: Research areas are Physical & Biological Sciences.

Income and R & D expenditure

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations received	—	0.19	2.33
Grants received	18.93	33.56	30.37
Other income	Nil	Nil	Nil
<i>Expenditure on R & D</i>			
• Capital	20.56	33.90	35.99

Infrastructural facilities

Land & Building

: Academy has its own building, but the extension/new building plan is proposed.

Equipment facilities

: Gross value: Rs. 9.9 lakhs

List of sophisticated equipment :

Water analyses, spectrop hotometers, Field and Microphoto equipments
Computers, printers & accessories (including air-conditioning equipments
Fax machine & cvt.

R&D Manpower:

	Qualification	Full time	Part time
Scientific & Technical	Doctorates	1	
	Post Graduate	1	
	Diploma Holders	1	
	Others	1	
Social Sciences and Others	As per rules of the Academy	14	2

Library facilities

: Well established library with a good collection of books, journals etc. and a reading hall (Sir Dr. Padamat Singhania Library Hall), is situated in the premises of the Academy. An expansion plan is there to systematize and standardize the library to the best possible extent.

Major achievements claimed:

- **New Techniques/methodologies developed and implemented:**
Researcher have established several concepts/methods which are being published in the form of scientific papers.
- **Research papers/Reports Published:**
 - (i) Several publications as Proceedings, National Academy of Sciences, India - Section A (Phy. Sci.) & Section B - Biological Sciences - quarterly journal, Special Volumes of the Proceedings are also published from time to time.
 - (ii) National Academy Science Letters - monthly journal - for rapid publication.
 - (iii) Annual Numbers, Annual Reports, Year Book, Abstracts Book and other specialize books are also published.
 - (iv) Proceedings of Symposia/Seminars are also published.
- **Seminars/Conferences attended/organised**
Every year Academy organizes its Annual Session and one or more Symposia/Seminars, popular lectures, award lectures, popularization programme etc. series of popular lectures are also being organized in the remote areas to promote scientific temper.
- **Any Other:**
Professor M.N. Saha Distinguished Fellowship as recently been instituted and awarded to Prof. M.G.K. Menon.

Name and Designation of Senior Researchers:

- Prof. U.S. Srivastava, Former Head, Zoology Department, Allahabad University.
- Prof. Krishna Swarup, Former Head, Zoology Department, Gorakhpur University.
- Dr. S.S. Bhatnagar, Physics Department, Allahabad University.

NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS

Address

34 Km Milestone,
Delhi-Mathura Road,
Ballabgarh - 121 004
(Haryana)

Background

Status of the SIRO

: National Council for Cement and Building Materials is an autonomous body registered under the Societies Registration Act, 1860 and is under the control of Department, of Industrial Development, Ministry of Industry, New Delhi. NCB (previously Cement Research Institute of India) was set up on 24 December 1962.

Major research areas

: NCB is devoted to Research, Technology Development and Transfer, Education and Industrial services for the cement and building materials industry.

Initial recognition by DSIR

: April, 1990

Income and R & D expenditure

		(Rs. in lakhs)		
Income		1992-93	1993-94	1994-95
				(Provisional)
Income.				
Donations Received	:	Nil	Nil	Nil
Grants Received	:	47.00	222.96	263.00
Other Income	:	387.25	191.14	258.62
Expenditure on R & D				
● Capital	:	0.96	17.52	17.66
● Recurring	:	439.89	414.87	508.00

Infrastructural facilities :

Land & Building	: Value	: Rs. 543.07 lakhs
Equipment Facilities	: Gross Value	: Rs. 799.14 lakhs
Other Assets	: Gross Value	: Rs. 93.45 lakhs

R&D Manpower

	Qualification	Full time
Scientific & Technical:	Doctorates/Post Graduates/Diploma Holders	240
Social Sciences and Other:	Post Graduates/Graduates/Diploma Holders	91
<i>Library facilities :</i>		
	(i) Total holdings : 41669 documents	
	(ii) Journals received : 155	
	(iii) Inter library loan;	
	(iv) Documentation Services : Current Awareness	

Lists;

- (v) Reprography;
- (vi) Translation;
- (vii) Bibliographic Database for interactive searches : 20,000 records;
- (viii) E-mail service; and
- (ix) Reference services.

Major achievements claimed

- Technologies developed and transferred for upscaling/commercialisation:
 - (i) Fast setting cement based formulations.
 - (ii) High strength concrete using superplasticizers.
- Technologies developed and ready for upscaling/commercialisation :
 - (i) Mechanised regulator for clinker bed in Vertical Shaft Kiln (VSK).
 - (ii) Improved gypsum based products such as wall panels, partition boards and fibre reinforced boards from by-product gypsum.
 - (iii) Utilization of kiln dust and other wastes in the manufacture of bricks and blocks.
- New Technologies/methodologies developed and implemented:
 - (i) Computer aided mine planning and production scheduling.
 - (ii) Environment Management Plan for mining of limestone.
 - (iii) Establishment of Limestone Consumption Factor (LCF) for cement manufacture.
 - (iv) Optimisation of raw mix design in cement manufacture.
 - (v) Simulation programme for ILC type precalciner kiln.
 - (vi) Interactive software for computer aided design of structure in cement plant.
 - (vii) Environmental impact monitoring of limestone mining through remote sensing.
 - (viii) Guidelines for repair and rehabilitation of concrete structures.



X-Ray diffractometer with improved optics and high temperature facility

- Patents filed : 1
- Research Papers/Reports Published : 4
- Seminars/ Conferences attended/organised :
- Seminars/Conferences organised :
 - (1) 9th International Congress on the Chemistry of Cement, New Delhi, India - 23—28 November 1992.
 - (2) Fourth NCB International Seminar on Cement and Building Materials, New Delhi, 12—15 December 1994.
- Seminars/Conferences attended : 7

Name and Designation of five Senior Researchers :

- Dr. S.P. Ghosh, Director General
- Dr. A.K. Mullick, Director
- Dr. C. Rajkumar, Director
- Dr. J.P. Saxena, Director
- Dr. N. Raghavendra, Director

NATIONAL FOUNDATION OF INDIAN ENGINEERS

Address
11/6B, Pusa Road,
New Delhi-110 005.

Background

Promote Science & Technology & other areas of Societal interests like Energy Conservation, Environment Control, Total Quality Management in Education & Industry, Project Management, etc.

Income and R & D expenditure

Income	1992-93	(Rs. in lakhs)	
		1993-94	1994-95 (Provisional)
Donations Received :	2.70	2.40	4.40
Grants Received :	0.60	0.90	1.40
Other income :	0.86	0.71	4.49
Expenditure on R & D			
● Capital :	0.11	0.08	0.07
● Recurring :	2.34	4.48	7.33

Infrastructural facilities

Land & Building : Rented Office

Equipment facilities : Gross Value: Rs. 4.5 Lakhs Approx.

List of sophisticated equipment :

- Computers
- Printers
- Photocopier Machine etc.

R & D Manpower : We draw members help as per requirements.

Major achievements claimed :

- i) NAFEN has, so far, organised 8 International Conferences on most vital topics such as Electromation, Technologies for the Next Decade in Key Sector Areas, Environment, Information Technology Communication etc. and 7 National Level Competitions for students. These National Level Competitions are being organised to inculcate a habit of Energy Conservation among the younger generation and to make them aware of the importance of Energy at the grass root level.
- ii) In Addition, NAFEN invites eminent personalities/speakers every month to share their valuable ideas and experiences with the Members from all functional areas. So far, 50 Speakers (including Ministers/Ambassadors) have graced NAFEN Forum.
- iii) To promote Science & Technology at international leve, NAFEN has Long-term Technical Cooperation Agreements with a number of International professional bodies/Universities/Institutes both in Eastern and Western World.
- iv) NAFEN has a number of Consultants in Hi-tech areas and so far 15 Consultancy Studies in Hi-Tech areas have been completed. As a result of specialised consultancy services rendered by NAFEN, Government of India have recognised NAFEN as a Consultancy Organisation. Similarly the World Bank, US has also recognised NAFEN as a Consultancy

Organisation. NAFEN has tie up with Third World Academy of Sciences, Triesty, Italy.

- v) NAFEN also recognises the excellent work done by the outstanding personalities, in every field, and as a recognition, awards NAFEN Excellence Awards to such personalities who excelled in their field of activities annually. So far, 64 such prestigious awards have been given to distinguished personalities in India and abroad.
- vi) NAFEN organised a 2-day National Seminar on "Excellence in Higher Technical Education" on 7th and 8th November, 1994 at New Delh in association with Department of Training & Technical Education, Government of Delhi.
- vii) NAFEN has already organised 8 International Confernecees
- viii) In order to promote "Energy Conservation" right at the grass root level, NAFEN is conducting every year competition for School children from standard III to standard XIII. Viewing the good response of this competition, in 1993. This competition has been extended to Universities/Technical Institutes and Polytechnical Institutes.

Name and Designation of five Senior Researchers:

- Dr. P.K. Gupta, Secy. General, NAFEN
- Dr. B.N. Mishra, Director, DIT
- Dr. B.S.K. Naidu, General Manager, IREDA
- Prof. P.B. Sharma, Principal, DCE
- Dr. S.M. Goel, Principal, College of Engineering, Faizpur

NATIONAL INSTITUTE FOR TRAINING IN INDUSTRIAL ENGINEERING

Address
P.O. NITIE,
Vihar Lake Road,
Mumbai-400 087.

Background

Year of establishment

: National Institute of Industrial Engineering was established as a National Institute in 1963 by the Government of India with assistance of the United Nations Development Programme through the International Labour Organisation.

Major objectives

: NITIE offers 18-month Post-Graduate Programme in Industrial Engineering; 2-year Post-Graduate Programme in Industrial Management; conduct short-term Executive Development Programmes in Industrial Engineering and allied fields for the benefit of industry; undertake Consultancy and Research in Industrial Engineering discipline. NITIE also conduct Seminars and Conferences from time to time.

Major research areas

: Technology Forecasting, Industrial Engineering, Maintenance Management, Ergonomics and Safety, Manufacturing Management, Transportation Management, etc.

NITIE has set up the following Laboratories:

Ergonomics Laboratory

Computer Laboratory

Maintenance Laboratory

Energy Laboratory

Work Study Laboratory.

Income and R & D expenditure:

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations received	Nil	Nil	Nil
Grants received	150	Nil	331.00
Other income	50	Nil	120.00
<i>Expenditure on R & D</i>			
• Capital:	50 lakhs	(not furnished)	
• Recurring:	20 lakhs	(not furnished)	

Infrastructural facilities:

Land & Building

: Land : 60 acres

Building: 40,000 sq. mtrs.

Equipment facilities

: Gross value : Rs. 200 lakhs

List of Sophisticated Equipment:

Computer
 CAD/CAM
 Climatic Chamber
 Noise Chamber
 Audio Visual Lab. Equipments
 Energy Lab. Equipments
 Condition Monitoring Lab.
 Equipments

R & D Manpower:

Scientific & Technical

—

Full Time

20

Social Sciences and Others

—

20

Library facilities

: 50,000 Books, 200 Journals and a number of back-volumes of journals.

Major achievements claimed:

- New Techniques/methodologies developed and implemented : Applied Research in Indl. Engg. and Indl. Management for solving industrial Problem.
- Research papers/ Reports Published : 20 papers per year
- Seminars/Conferences attended/organised : 10 per year 5 international and 5 local

Name and Designation of five Senior Researchers

- Prof. N. Sambandam, Professor
- Prof. D. Bhattacharya, Professor
- Prof. Susy Philopose, Professor
- Prof. K. Muthukrishnan, Professor
- Prof. V. Sundaram, Professor

NATIONAL INSTITUTE OF ADVANCED STUDIES

Background:

Status of the SIRO

Year of establishment

: The Institute, a brain child of Mr. J.R.D. Tata, was started in 1988 with Dr. Raja Ramanna as the Director. It is situated in Bangalore on 5 acres of land within the campus of the Indian Institute of Science. The buildings consist of 30 fully equipped residential rooms along with a dining hall and a lounge, capable of accommodating 60 people at a time. There are two lecture halls, one of them with a seating capacity of 100. There is a well-equipped library with books and journals covering a variety of subjects, keeping in mind the inter-disciplinary nature of the Institute.

Major objectives

: The Institute (subsequently referred to as NIAS) is a centre for learning with twin objectives. The first is to provide an atmosphere in which through exchange of ideas. Exposure to new knowledge in different areas, introduction to nation's socio-cultural heritage and understanding of the strengths as well as weaknesses of human personality, one could move towards the widening of mental horizons, which makes for more accurate and effective decision-making. The other is to support and lead multi-disciplinary research on the borderlands of Natural Sciences, Life Sciences, Social Sciences and Humanities; helping the researchers from different disciplines work together, understand each other's language and attack complex problems in a comprehensive fashion.

Major research areas

- : (i) Structure of Music in Raga & Western System Dr. Raja Ramanna and Prof. B.V. Sreekantan published a paper entitled "Correlations of Masses and Lifetimes of Radio-nuclide and fundamental particles" in the first week of May, 1995 issue of Modern Physics Letters 'A' Vol. 10, No. 9, 1995. pp. 741—753.
- (ii) Study of Creativity Amongst Indian Scientists.
- (iii) Psycho-social study of Alienation amongst Indian Youth
- (iv) Study on Women's Policy Research and Advocacy
- (v) Assessment of the role of "Fast Breeder Reactors and Thorium Utilisation.
- (vi) "Cosmic Rays and High Energy Astronomies" "Understanding of the

problem of Consciousness".
 (vii) "Chadning Values in India Today and
 "Caste in Contemporary India.

Income and R & D expenditure:

Income	1992-93	1993-94	(Rs. in lakhs) 1994-95
Donations received	56.00	15.00	
Grants received	2.00	2.00	
Other income	22.90	23.80	2.00 45.62
Expenditure on R&D			
● Capital	Nil	Nil	Nil
● Recurring	2.75	4.83	18.95

Infrastructural facilities:

Land & Building : Indian Institute of Science has leased 5 acres of land to the Institute. The first phase of the buildings with office and participants accommodation and lecture hall and second phase consisting of new library, reading room, additional dining hall-cum-lounge complex have been completed. The construction of auditorium is in progress.

List of equipment:

Xerox, Fax, Franking, Weighing, Comb binding, flipper machines etc. with adequate number of computers.

R&D Manpower:

	Qualification	Full Time
Scientific & Technical	Doctorates	5
	Post Graduates	1
	Others	1
Medical Sciences	Doctorates	1
	Post Graduates	1
Agricultural Sciences	Doctorates	1
	Post Graduates	2
Social Sciences	Doctorates	2
	Post Graduates	4
Others	BME(Hons), FIE (Civil)(I)	1

Library facilities

: The collection in the library relevant to the projects and programmes of the Institute. It has a unique and rich collection of contemporary and classical literature on sociology, psychology, philosophy, history besides books on science and technology. Special care has been taken to acquire books of interdisciplinary nature. One of the aims has been to build a comprehensive and representative collection of books on India, its history, religion and philosophy, society and culture. There is also an inspiring collection of biographies and writings of

eminent scientists, thinkers, administrators and political personalities. The library has a separate section for books on Mahatma Gandhi literature. There is also a section for books on Indian and western classical literature and art. There is a good reference section containing Encyclopedias like the McGraw-hill Encyclopedia of Science and Technology, Dictionaries, Yearbooks etc which cater to needs of immediate reference. In addition to books, the Institute library subscribes to a select number of professional journals.

Major achievements claimed:

(i) Conducted residential participatory courses for persons in senior positions from government, industries and universities. In these courses, renowned scholars and experts from all over the country acquaint the participants not only with the new developments in various fields of knowledge, but also put them in touch with nation's Socio-cultural roots and its experiments towards becoming a modern state without parting with time-tested traditional value. Besides taking part in the Lectures and Discussions, the participants make their contributions through talks on subjects of their own interest, presenting critical reviews of selected books, taking part in panel discussions and by carrying out specific projects. The Government participants are officers of the level of Joint Secretary and those from industries are of senior management cadre. This course is normally held in the month of January. So far nine such courses have been conducted. In 1996, the course will be conducted from January 8 February 3. The participants of the other course which is jointly sponsored by NIAS, UGC and JNCASR, are the University and College Teachers of appropriate level. So far three such courses have been conducted in the Institute.

(ii) Conducted Workshops, Seminars and Symposia on issues of National Importance, as well as on other scientific and scholarly subjects. The institute also hosts courses, seminars, etc., organised by other allied institutions wishing to make use of the facilities;

(iii) Conducted Socially relevant multi-disciplinary research on the borderlands of Sciences, Social Sciences and Humanities;

(iv) Invited visiting professions on long-term basis. During this period, a visitor could put finishing touches to his on-going research and also interact with the permanent faculty in planning and executing new or on-going research programmes;

(v) Invited Key administrators from the Government and Industries to come as Visiting Fellows for six months to a year. Here they would pursue any new developmental ideas they have, fill in the gaps in knowledge pertinent to their tasks and test out their ideas with the permanent and Visiting Faculty. Some of these ideas could become foci for the national workshops mentioned in (ii) above;

(vi) Published books, monographs, periodicals and papers; and

(vii) Co-operated with other Institutions and Organisations and contribute knowledge at inter-disciplinary level.

Three new programmes added to the above list are:—

(i) A scheme has been developed to invite eminent persons, professionals, scientists and scholars to become associates of

the Institute. This is to encourage others interested in NIAS philosophy to interact with the faculty and attend lectures, seminars, etc. They will have access to the Institute catering facilities so that they could hold stimulating discussions in a leisuerly atmosphere. Those not normally resident in Bangalore could also use the residential facilities, if available, for short periods. Since January 1993, the Institute has been holding at least one programme of the associates every months with lectures, demonstrations, discussions, arts and music by renowned persons.

- (ii) Another scheme has been developed to encourage research workers, both from India and abroad, to come and work as Visiting Associates in our Institute on specific research projects which are in tune with the philosophy of the Institute. The Visiting Associates will come with their own finances and will have a chance to work closely with the permanent faculty.
- (iii) It has been decided to hold a one month residential course every year appropriate for the university and college teachers on the same lines as that of the senior executives. The aim is to widen the outlook and add to the communication skills of the lecturers. The first course was held in October, 1993. This course is normally held in the month of July and applications are expected to reach the Institute by May. But from 1996 this course will be held in the month of October.

- Research Papers/Reports : 14
Published

- Seminars/Conferences : A Workshop on "Teaching Management attendees/organised to Women Managers" was held from July 16 to 23, 1993, by the Foundation for Research in Health System in collaboration with Deutsche Stiftung Fur Internationale Entwicklung (DSE), Germany and Chetna, a voluntary organisation in Ahmedabad.

Prof. B.V. Sreekantan attended the 23rd International Conference on "Cosmic Rays" held at Calgary in Canada from July 19 to 30, 1993.

A high level non-official INDO-US joint meeting on "Technology Transfer and Non-proliferation" was held from January 17 to 21, 1994. The Indian team was headed by Dr. Raja Ramanna and the United States team by Mr. Robert S. McNamara.

Dr. Raja Ramanna attended a Conference on "Arms Control proposals in South Asia" in Shanghai from February 23 to 26, 1994, as by the Federation representative from India. This was sponsored by the Federation of American Scientists (FAS). The participant countries were India, China, Pakistan and the United States.

A seminar on DST project entitled "Formulation of Criteria for Effective R&D

Funding" was held from March 12 to 13, 1994.

A discussion meeting on "Science, Technology and Performing Arts" organised by NIAS and the Gandhi Centre of Science and Human Values was held on May 30, 1994.

UNESCO-NIAS National Action Research Conference on "Women and Literacy", on the request from the UNESCO Institute of Education, Hamburg, was organised by NIAS from December 13 to 15, 1994.

An International Workshop on "Qualitative Methods in Mental Health Research" organised under the initiative of NIAS and was supported by the International Development Research Centre (IDRC), Canada was held from April 10 to 12, 1995.

The Workshop on "Human Rights" at the Karnataka Police Academy organised for the police Sub-inspectors under training, on behalf of the National Law School of India University was held in Mysore from May 3 to 5, & 9, 1995.

Name and Designation of Senior Researchers:

- Dr. Raja Ramanna, Director
- Prof. R. L. Kapur, Dy. Director
- Prof. B. V. Sreekantan, Sr. Homi Bhabha Fellow
- Prof. C. V. Sundaram, Homi Bhabha Visiting Professor
- Prof. M. N. Srinivas, J. R. D. Tata Visiting Professor

NATIONAL INSTITUTE OF CONSTRUCTION MANAGEMENT AND RESEARCH

Address

Walchand Centre,
Tardeo, Bombay 400 034.

Background

Status of the SIRO : Registered Society & Public Trust
 Year of establishment : 1983
 Major research areas : Construction Management
 Project Management.
 Construction machineries and materials.
 Skill formation, skill upgradation and employment creation.
 National Data Bases related to construction.
 Quality and Safety.
 Development of low cost construction technologies, materials, designs and methodologies.

Initial recognition by DSIR : August 1990.

Income and R & D expenditure

	1992-93	1993-94	(Rs. in lakhs) 1994-95
<i>Income</i>			
Donations Received	3.58	20.06	20.40
Grants Received	5.35	1.00	4.10
Other income	18.68	25.87	53.67

Expenditure on R&D

• Capital	12.63	9.01	29.23
• Recurring	0.35	1.69	9.34

Infrastructural facilities:

<i>Land & Area</i>	<i>Value</i>
i. Campus at Pune on 4 Ha land	Rs. 46.21 lakhs
ii. Campus at Gurgaon on 1 Acre land	Rent free use
iii. Campus in Down Town Bombay	Rent free use
Equipments installed (approx. gross value)	Rs. 13.48 lakhs

R&D Manpower	<i>Full time</i>	<i>Part time</i>
Scientific & Technical	14	7
Others	29	2

Major achievements claimed

- Creating national databases for construction machinery, building materials, construction management, consultancy firms and contractors.
- Construction management studies in the planning of Tipaimukh hydro-power project.
- Construction of experimental building structures using low cost local resources and earthquake resistant designs and technologies.
- Monitoring methodologies of rehabilitation and resettlement of involuntary dislocation caused by development projects.
- Computerized project management models.

Name and Designation of five Senior Researchers

- Prof. K.N. Vaid, Director General
- Dr. S.N. Deshpande, Director
- Dr. R.N. Munshi, Director
- Dr. R.C. Kehar, Director
- Mr. M.K. Vishwanath, Professor

NATIONAL INSTITUTE OF ROCK MECHANICS

Address

Champion Reefs Kolar
Gold Fields-563 117
Karnataka, India

Background

Status of the SIRO

: Established in July 1988 as an autonomous institute under the Ministry of Mines, Government of India. The institute is registered as a Society under the Karnataka Societies Registration Act, 1960.

Major objectives

The Institute was established to meet the following objectives:

- Scientific design of mine workings
- To provide consultancy services in the design of rock excavation for mining and civil engineering projects
- Develop excellence in Rock Mechanics
- Organise training courses in Rock Mechanics and develop facilities for post-graduate research.

Major research areas:

To fulfil the above objectives, state-of-the art facilities and expertise were developed in the following research areas:

- Geotechnical Investigations
- Numerical Modelling
- Ground Control
- Slope Stability
- Rock Blasting
- Instrumentation
- Seismology
- Rock Fracture Mechanics, and
- Mine Design

Initial recognition by DSIR : 1991

Income and R & D expenditure

	(Rs. in Lakhs)		
Income	1992-93	1993-94	1994-95
Donations received	Nil	Nil	Nil
Grants Received	75.00	100.00	114.25
Other Income	17.62	38.55	31.80
Expenditure on R&D			
● Capital	39.84	46.70	38.08
● Recurring (Research Exp.)	35.16	53.30	76.17

Infrastructural facilities

Land and Building : Area: 2400 sq. mtrs

Value : 43.99 lakhs

Equipment facilities : Gross Value: Rs. 230.71 lakhs

List of sophisticated equipments

The laboratories are well equipped with sophisticated facilities required for rock Blasting & seismology testing service computer hardware & softwares for Numerical modeling & mine design, etc.

R&D Manpower

	Qualification	Full time	Part time
	Scientific & Technical		
	Applied and engineering	39	3
	Social Sciences and Others	22	—

Major achievements claimed

- Technologies developed and transferred for upscaling/ commercialisation:
Roof Stability Tester to check the roof conditions in Coal Mines.
- Technologies developed and ready for upscaling:
Continuous strata monitoring for evaluating roof stability in Coal Mines
- New Techniques/methodologies developed and implemented:
Stoping method and mining sequences for MOIL mines.
- Patents Filed : 1
- Research papers : 21
Reports : 120
Published
- Siminars/Conferences : 4 organised
attended/organised

Name and Designation of five Senior Researchers

- Dr. N.M. Raju, Director
- Dr. J. Chattopadhyay, Scientist V
- Dr. V. Venkateswarulu, Scientist III
- Dr. G.R. Adhikar, Scientist III
- Dr. S. Sengupta, Scientist III

NATIONAL SHIP DESIGN & RESEARCH CENTRE

Registered Address

Gandhigram,
Visakhapatnam-500 005 (A.P.)

Background

- Status of the SIRO : Registered Society under the administrative control of Ministry of Surface Transport
- Year of establishment : March, 1989
- Major objectives :
- i) To promote and develop ship design.
 - ii) To advise shipping and shipbuilding organisation in India, on matters leading to improved efficiency and increased productivity.
 - iii) To assimilate and disseminate knowledge of advancement in maritime technology and to elevate in Indian Maritime sector to international standards.
 - iv) To prepare plans for research and development in maritime sector
 - v) To act as a data/information centre-cum-library for the maritime sector.
- Major research areas : Hydrodynamics, Strength of ships, Vibration & Noise
- Initial recognition by DSIR : June, 1991

Income and R & D expenditure

	(Rs. in lakhs)		
Income	1992-93	1993-94	1994-95
Donations Received	Nil	Nil	Nil
Grants Received	145.32	225.00	179.17
Other income	0.88	10.68	22.46

Expenditure on R&D

- Capital (Not Reflected)
- Recurring

Infrastructural facilities:

Land & Building : 5 acres of land & Building costing about Rs. 335 lakhs.

Equipment facilities : Gross value Rs. 842.78 lakhs.

List of sophisticated equipment

- Dual host VAX-3400 Server, 2 computers networked with PC-ATs, VAX Workstations and a host of plotters, printers, optical disk system and scanner

R&D Manpower

	Qualification	Full time
Scientific & Technical* :	Post Graduate	37
Social Sciences & Others :	Graduate	05

Library facilities : The Technical Information Cell in NSDRC houses a modern technical library with emphasis on Maritime information. This include books, journals, technical articles, ship drawings and other database.

Major achievements claimed:

- Technologies developed and ready for upscaling :

The major area of involvement of NSDRC is ship design. Towards this end, NSDRC is in the pocess of producing standard designs for varicus marine vehicles plying in the Indian ports. Some of the other areas having potential for commercialisaton are as follows:—

- a) NSDRC is producing a software for predicting the ship motion and responses (sea keeping criteria) while under way. The software is being developed with the help of dutch consultants to NSDRC.
- b) Development of software to evaluate the performance of ships during various tests and trials, thereby developing a criteria for acceptance of ships.

- New Techniques/methodologies developed and implemented

NSDRC is in the process of preparing "Quality Manuals" required for obtaining ISO 9002 certification.

- Research papers/Reports Published : 5
- Seminars/Conferences attended/Organised : 11

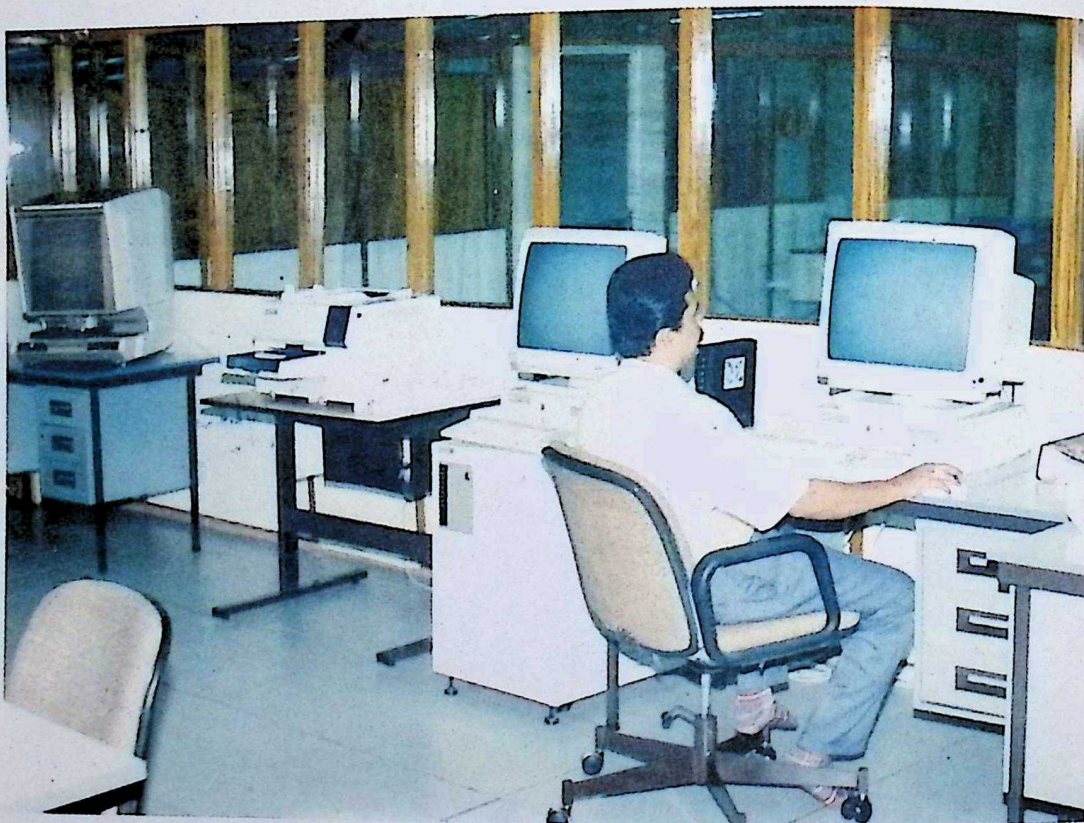
- Any other :

- (i) NSDRC has examined some of the port crafts at some Indian ports and has given recommendations to extend the lives of these vessels.
- (ii) NSDRC had condcuted extended survey of ship repair and shipbuilding activities in the country with specific references to the state of Gujarat. Presently NSDRC is in the process of preparing feasibility report for setting-up a high-tech shipbuilding and repair yard, at the Pipavan port in Gujarat.

Name and Designation of five Senior Researchers:

- Dr. A.V. Krishna Rao, Chief Designer (H&S)
- Cdr. K.K. Varma, manager (M.C.S)

- U.R.P. Sudhakar, Designer (E&S)
- Mrs Beaula Prashanth, Deputy Designer (H&S)
- Debasis Dey, Junior Designer (H&S)



Optical Disk Storage & Retrieval System at NSDRC

NORTHERN INDIA TEXTILE RESEARCH ASSOCIATION

Address
Sector-23, Rajnagar,
Ghaziabad-201002.

Background

Status of the SIRO	:	Association
Year of establishment	:	1975
Major objectives	:	To promote, foster scientific research studies for the extension of knowledge related to or connected with Textile Industry.
Initial recognition by DSIR	:	1998

Income and R & D expenditure:

		(Rs. in lakhs)	
Income	1992-93	1993-94	1994-95
Donations received	Nil	3.10	Nil
Grants received	80.23	87.77	112.22
Other income	48.77	52.88	84.17
Expenditure on R & D			
● Capital:	33.91	32.36	74.20
● Recurring:	48.77	92.52	128.63

Infrastructural facilities:

<i>List of sophisticated equipments</i>	:	● Busting strength Tester ● Feleric - Thickness tester ● Threads measuring Apparatus ● Feed Circular Knitting Machine for lab testing ● Thermal & Electrical testing equipments ● UV-VIS Spectrometer ● HPLC Unit ● Yarn friction meter ● M 1200 FTIR Spectrometer with Computer ● 8000 Series Gas Chromograph (8320 Model)
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R & D Manpower :

	Qualification	Full Time
Scientific & Technical	Doctorates	52
Social Sciences	Doctorates	24
Others		6

Library facilities:

- Publications
- Documentation services
- Bibliography
- Reference Services
- Current Awareness Service
- Selective Dissemination of information
- Reprography
- Literature survey

Major achievements claimed :

- Technologies developed and transferred for commercialisation

: Energy Efficient spindle oils.
The new oil has better properties with respect to viscosity, rust protection, thermal stability, sanitifrication, metal compatibility Energy Conservation etc.

- Technologies developed and ready for upscaling

: i) Novel technique of neutralisation of alkaline effluents by boiler flue gas.

This is the technique by which the gas emnating from boiler is made to interact with liquid effluents being discharged from textile mills and pH is reduced from 11.5 to 7.4.

ii) Lubrication System of Zero twist PFY

It not only replaces conventional energy oriented sizing system but also helps industry in cost saving in terms of material production cost and lowering effluents load.

iii) Development of Reverse Osmosis membrane for recovery of chemicals and auxiliaries from Textile effluent and recycling of water for process house.

The Low cost polymeric membrane based on styrene Co-polymer has showed reasonable productivity with a high separation of Dyes (more than 98%). Membrane is characterised for its porosity, pore size, and its distribution using various techniques. Remarkable resistance against adverse thermal and chemical conditions.

- New Techniques/methodologies developed and

i) Filter bags for dust filtration developed suitable for cement industry, power generation plants and fertilizer units. May act as Import substitute.

ii) Developed Knitted based coated tarpaulin fabrics for truck cover.

- Patents filed

: 3

- Research papers/ Reports Published

: 52

- Seminars/Conference : 25
organised
- Awards won : 1

Name and Designation of Senior Researchers

- Sh. D. K. Bhattacharya, Dy. Director
- Dr. B. D. Thakur, Asstt. Director
- Sh. P. K. Mukhopadhyay, Asstt, Director
- Sh. M. Chakraborty, Asstt. Director
- Sh. S. Satsangi, Asstt. Director

ONGC-SCHLUMBERGER WIRELINE RESEARCH CENTRE

Address

6th Floor, Kailash Building,
26, K.G. Marg, New Delhi-110 001.

Background : ONGC-Schlumberger Wireline Research Centre was established in Feb. 1987.

Major objectives/research area:

- Formation evaluation particularly involving new measurements on difficult conditions
- Reservoir Characterisation
- Reservoir/Well performance studies.
- Evaluation of experimental tools.
- Special studies such as locations for horizontal wells, mechanical properties of rock, evaluation of well completion.
- Software development

Initial recognition by DSIR : 1988

Income and R & D expenditure:

	1992-93	1993-94	(Rs. in lakhs) 1994-95
<i>Income</i>			
Contribution Received	191.60	223.18	353.04
Grants received	Nil	Nil	Nil
Other income	Nil	Nil	Nil
<i>Expenditure on R & D</i>			
● Capital	30.89	32.10	14.06
● Recurring	182.99	205.03	211.78

Infrastructural facilities

Land & Building : Provided by ONGC Ltd. Free of Cost.

Equipment Facilities: Gross Value : 159.10 Lakhs

List of Sophisticated equipment

- (i) Sun-Sparc-5 : Mapping Software-CPS-3
- (ii) Sparc-Server-670 : Reservoir Modelling & Seismic Interpretation Software Charisma

R & D Manpower :

	Qualification	Full Time
Scientific & Technical*	Doctorates/Postgraduates	18
Social Sciences and other	Engs. Graduates	41
Library facilities	: Good collection on geoscientific subjects	

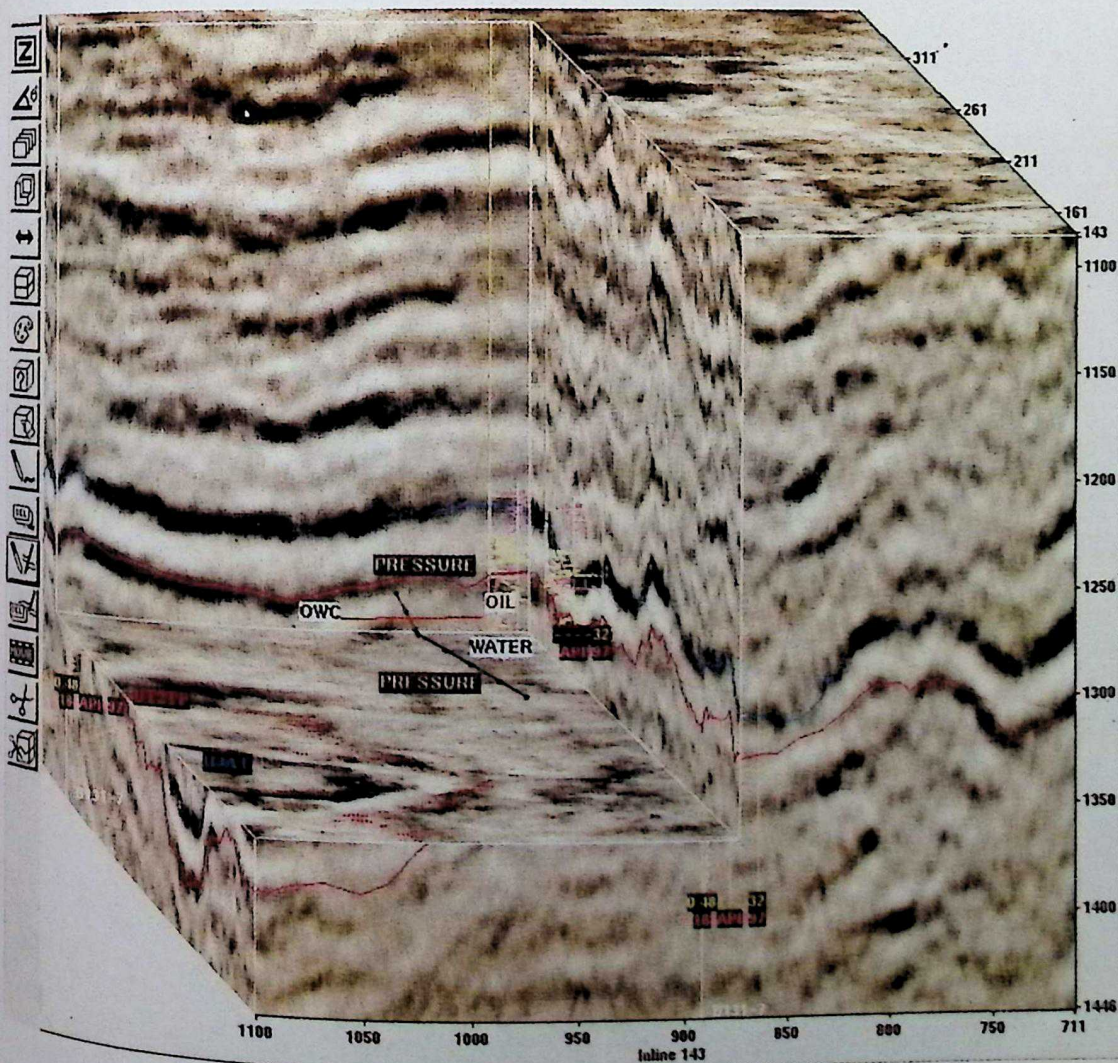
Major achievements claimed:

- Technologies developed transferred for up scaling/commercialisation.:
- Interpretation of low resistivity productive sands of Gandhinagar Field for rational reserve estimation.
- Estimating by pass oil from the producing fields using RST tools.

- Technologies developed and ready for up-scaling : Predicting producibility from facies maps & from stoneley waves.
- New techniques/methodologies developed and implemented : Reservoir characterisation integrating multidisciplinary data
- Research Papers/Reports Published : 9 Research Papers/ 6 Reports published
- Seminars/Conferences attended/Organised : 6 Seminars organised

Name and Designation of five Senior Researchers:

- J.M. Singer, Director
- L. Moinard, Petrophysicist
- P.K. Ablewhite, Reservoir Engineer
- R.N. Chakravorty, Dy. G.M. (Logg.)
- Anjani Kumar, Chief Geologist



Successful prediction through integrated interpretation

PADMAJA NAIDU HIMALAYAN ZOOLOGICAL PARK

Address:

Padmaja Naidu Himalayan
Zoological Park,
Darjeeling-734 101

Background :

This is one of the highest altitude zoos in the world established in August, 1958. The main objectives are the conservation of natural resources and preservation of the Himalayan animals, research on ecology, animal behaviour, biology and physiology of different high altitude fauna and flora, and reintroduction of rare and endangered wild animals into the wild.

Income and expenditure :

	1992-93	1993-94	(Rs. in lakhs)
<i>Income</i>			
Donations Received	Nil	Nil	1994-95
Grants received	26.54	52.45	Nil
Other income	2.54	2.25	77.12
			5.51
<i>Expenditure on R & D</i>			
• Capital	20.65	22.75	39.42
• Recurring	14.52	24.62	28.45

Infrastructural facilities :

Land & Building	:	Area : 26 Acres
R & D Manpower	:	
		Full time
Scientific & Technical		14
Social Science and others		33

Major achievements claimed :

- First ever red panda (*Aihurus fulgens*) census in India at Singalila National Park, Darjeeling.
- Innovation of tranquillising dart (Syringe) using indigenous material for tranquilisation of wild animals.
- First ever successful systematic breeding and rearing of red panda (*Aihurus fulgens*) in India.
- Standardisation of systematic captive breeding of Snow leopard (*Panthera uncia*) in Indian condition.
- Development of technology for breeding and rearing of Siberian tiger (*Panthera tigris altaica*) in Indian condition.
- Creating initiative in the captive breeding programme of pure breed of Royal Bengal tiger (*Panthera tigris tigris*).

Articles Published :

6.

Seminars/Conferences

- attended/organised :
- Conferences attended - 2
 - Organised International Workshop on housing and healthcare of red panda from 24th to 26th April, 95

Name and Designation of Senior Researchers :

- Shri N.C. Bahuguna, Director
- Dr. T. Chakraborty, Deputy Director.
- Shri Kiron Moktan, Supervisor.

PARAMOUNT ACADEMY OF TECHNOLOGY

Background

Status of the SIRO : Society, November 28, 1990 at Calcutta under West Bengal Society Act XXXVI of 1961 (n/No S/66472 of 1990-'91)

Major objectives : (i) To carry out and promote research and other scientific work connected with cultivation, production and processing of rubber, tea, coffee, of cardamom and other crops.

(ii) To form, develop and run a professional body of persons connected with the development of art, science and technology of plantation crops with special emphasis on tea Processing and tasting/testing equipments and allied systems, Bio-chemistry, nutrition, environmental upliftment, chemistry of crops whethere in an academic, research, technical, technological, administrative, financial, marketing of other capacity.

Major research areas : (i) Judicious Nutrient Application Management in Tea Plantations, Through Folier Analysis

(ii) Development of Analytical Methods Aiming Towards the Quality Production during Tea Manufacture on Tea Factories.

(iii) Tea and Human Health Relationship.

(iv) Export Promotion & Quality Control in Tea Cargos.

Initial recognition by DSIR : 1991

Income and R & D expenditure

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
Income			
Donations Received :	2.01	2.35	3.81
Grants Received (R&D only) :	Nil	Nil	Nil
Other income :	0.14	0.42	0.18
Expenditure on R&D			
• Capital :	2.15	2.77	3.93
• Recurring :	1.30	2.17	2.87

Infrastructural facilities

Land & Building : The institute operates in a rented Building at Coimbatore, Tamil Nadu by Paying rent Rs. 4500/ per month.

Equipment facilities : Gross value 2.47 lakhs

List of sophisticated equipments:

- Visible Spectrophotometer.
- Photo Electric Colorimeter.
- Laminater-flow chamber.
- B.O.D. Incubator.
- Micrisscopes.
- Incubator.
- Centrifuge machine (3500 rpm capacity)

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical staff	Doctorates	—	2
	Post Graduates	3	—
	Graduates	1	—
	Diploma Holderds	1	—

Major achievements claimed :

● *Technologies developed and ready for upscaling:*

Diagnosis of Nutrient Deficiency and Requirement Through folier analysis and Indexing status of the critical nutrient values with best suitable time of sampling in tea.

(Nutrient status in 1st leaf & Bud, Third leaf and Mother leaf of a tea plant are more or less consistant. The 1st lead & Bud has highest nutrient concentration while it progressively decreases with the age of the leaf. Nitrogen & Phosphorus are continually translocated from older leaes to the younger parts. However potassium is redistributed to the living tissues from the old and dying parts only.

The month July/August i.e. after flush period and when the rain has been subsided, samples of leaf should be collected for analysis. The third leaf is recommended for sampling due to its consistancy of nutrient status during the time.

(Experiment was done only in South Indian Tea estates and further investigations requied in other Tea growing areas)

- Research papers/reports published : On print
- Seminars/conferences/attended/organised :
 - (i) five seminers are done on "Tea tasting & Quality" at Calcutta, Guahati, Coimbatore and other places.
 - (ii) Three seminers are done on "Business management and marketing" at Calcutta Hydrabad and other places.
 - (iii) one seminer on "Economic Manuring and better tea growing" at Coimbatore.
- Book published : 5
 - (i) On tea: (a) Spotlights on Tea, (b) varietea, (c) Tea cheers.
 - (ii) Directory: Paramount Tea Directory
 - iii) Children Comic: (a) Tea God and Cha-Cha Vally, (b) hell's Infamous Vally.

Name and Designation of five Senior Researchers

- Dr. K.K. Krishnamoorthi, Former Director, United
Planters Association of Aouth India.
- Dr. R. Seshadri, Former Director, Central Institute of
food and beverage Research Mysore.
- Dr. P. Kandaswami, Retd Head of Dept. T.N.A.U, Soil
Science
- Dr. G. Arunachalam, Head of Dept. Soil Socience. T.N.A.U.
Trichinapally.
- Dr. K. K. Bhattacharia, Director, Skan-J-Biotechnologies,
Coimbatore.

PHYSICAL RESEARCH LABORATORY

Address

Navrangpura,
Ahmedabad-380 009

Background

- Status of the SIRO : Institution
- Year of establishment : November 1947
- Major objectives : Major objective of the research programmes at PRL is to understand natural processes occurring on the Earth, in our solar system and in the galaxies far beyond.
- Major research areas : Astronomy and Astrophysics; Planetary Atmospheres and Aeronomy; Earth Sciences and Solar System Studies; Theoretical Physics
- Initial recognition by DSIR : 1989

Income and R & D expenditure

		(Rs. in lakhs)	
<i>Income</i>	<i>1992-93</i>	<i>1993-94</i>	<i>1994-95</i>
Donations Received	Nil	Nil	Nil
Grants Received	1058.99	1045.65	1000.93
Other income	15.19	31.64	28.20
<i>Expenditure on R&D</i>			
• Capital:	241.41	416.65	152.53
• Recurring:	732.66	782.14	888.60

Infrastructural Facilities

Equipment facilities : Gross Value: Rs. 1858.40 Lakhs.

List of sophisticated equipments :

Ion probe, Inosonde; Day-glow Photometer; UV Photoelectron Spectrometer; Infrared Telescope at Mt. Abu; Solar Telescope at Udaipur Solar Observatory; Radio Telescope at Thaltej near Ahmedabad; Scanning Electron Microscope; Lidar; Gas Chromatograph; Mass Spectrometer for stable Isotopes (Rb-Sr; Ar-Ar; noble gases and nitrogen).

R & D Manpower

	Full
	time
Scientific & Technical	266
Social Sciences and Others	173

Library facilities : (i) Interlibrary Loan; (ii) Reference and referral service; (iii) SDI service; (iv) Translation Service; (v) Bibliography; (vi) Photocopying

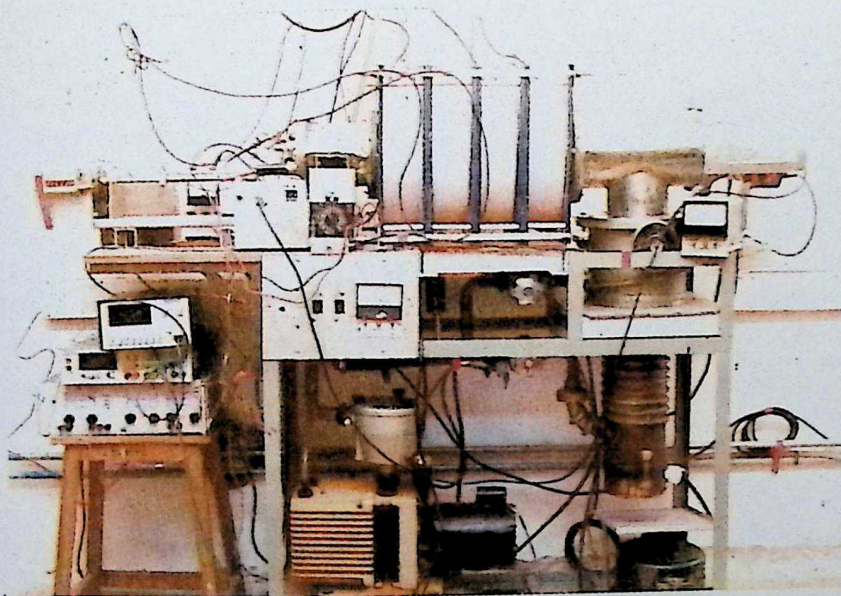
Research papers/Reports Published : 290 (for last three years ending 31 March 1995)

● Seminars/Conferences attended/Organised: 165 attended (for last three years ending 31 March 1995)

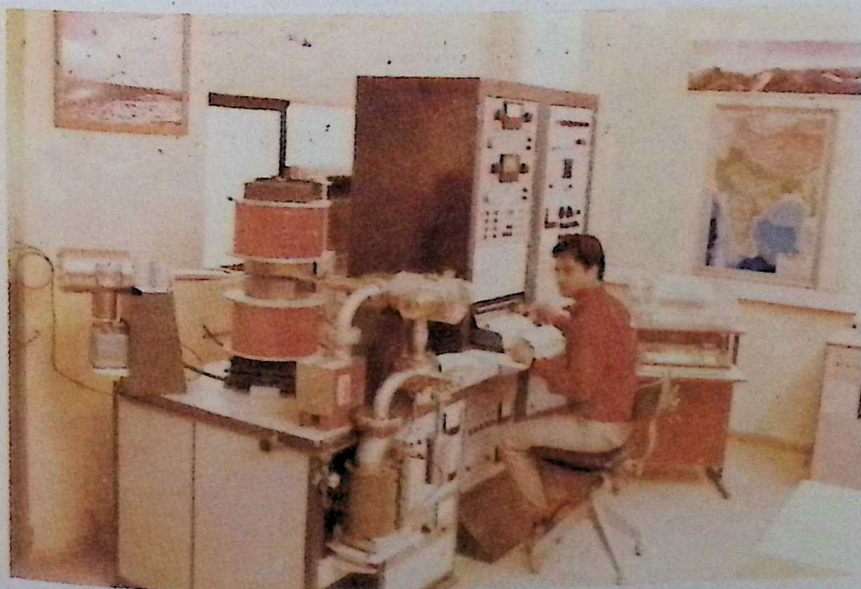
: 5 organised (for last three years ending 31 March 1995)

● Awards won

: 12



Basic Physics Laboratory



Mass Spectrometer Laboratory

Name and Designation of five Senior Researchers

- Prof. G.S. Agarwal
- Prof. J.C. Parikh
- Prof. B.L.K. Somayajulu
- Prof. S. Krishnaswami
- Prof. N. Bhandari



Ion Probe Laboratory

PONDICHERRY UNIVERSITY

Address
R. Venkatraman Nagar
Pondicherry 605 014

Background

- Year of establishment : 1985
- Major objectives : To disseminate and promote knowledge by providing innovative instructional and research facilities in such branches of learning as it may deem fit.
- Major research areas : To University is having 6 Schools, 15 Departments and 7 Centres of study. The teaching and research subject are management, Ecology, Physics, Chemistry, Biological Sciences, Biotechnology, Earth Sciences, Mathematics, Computer Science, International Studies, Performing Arts, Philosophy, Tamil, English, French, Sanskrit, History, Economics, Commerce, Physical Education, Sociology, Tourism and Futures Studies.

initial recognition by DSIR : 1994

Income and R & D expenditure:

		(Rs. in lakhs)		
		1992-93	1993-94	1994-95
<i>Income</i>				
Donations received	0.43	0.29	1.59	
Grants received	300.21	336.31	336.44	
Other income	57.67	106.44	124.92	
<i>Expenditure on R & D</i>				
● Capital*	Nil	Nil	Nil	
● Recurring**	43.86	56.41	66.00	

Infrastructural facilities:

- Land : Area (Land) : 780 acres
- Building : Value (Building) : Rs. 899.65 lakhs
- Equipment facilities : Gross value : Rs. 241.08 lakhs

List of sophisticated equipment

- Full-fledged Computer Centre
- Image Intensifier with accessories
- X-ray Defractometer
- RDR Spectrophotometer
- Visible Spectrometer
- Gas Chronograph
- HPLC Systems
- Mini Gamma Counter
- Liquid Scintillation Counter

- Polytron Homogenizer PT 3000 with accessories
- Photo System 1000 and Micro Centrifuge

R & D Manpower:

	Qualification	Full-time		
		P	R	L
Scientific & Technical	Doctorates	10	18	18
Social Sciences & Others	Doctorates	13	37	39

Library facilities

: The Library possess a collection of 74,995 books. 3,609 back volumes of journals and 300 journals were subscribed. Reprographic and Photocopying facilities are provided to the students, research scholars and faculties. The library has purchased and installed a Computer System and CD-ROM Network Server.

- Research Papers/Reports Published

: 18 faculty members published 20 books.

48 faculty members contributed 126 papers and they were published in reputed national and international journals

- Seminars/Conferences attended/organised

: 22 faculty members attended 48 Seminars and Symposia. 15 Short-term courses, Seminars and Symposia conducted.

Name and Designation of Senior Researchers

- Dr. A. Gnanam, Vice-Chancellor
- Dr. S. Mohan, Prof. of Physics
- Dr. A.G. Ramachandran Nair, Prof. of Chemistry
- Dr. E. Vijayan, Prof. of Biological Sciences
- Dr. S.A. Abbasi, Director, Centre for Pollution Control and Bio-waste Energy
- Dr. S. Jayachandran, Prof. of Bio-technology

PROCESS ENGINEERING DESIGN & DEVELOPMENT INSTITUTE

Address
161, Salt Lake City,
Kolkata-700 064.

Background

Status of the SIRO : Established in 1985 as a Registered non-profit making Society.

Major research area : Conduct research in the areas of process engineering design, development, education and training, information & technical services of all multi disciplinary fields of process engineering design particularly biotechnology, chemical, mineral processing, biochemical and biotechnology.

Initial recognition by DSIR: 1986

Income and R & D expenditure

		(Rs. in lakhs)		
<i>Income</i>		1992-93	1993-94	1994-95
Grants received	:	0.15	0.986	2.78
Other Income	:	0.81	0.96	0.97

Expenditure on R&D

● Capital	:	Nil	0.39	0.26
● Recurring	:	1.40	1.13	1.26

Infrastructural facilities

Equipment facilities : Gross Value: Rs. 11.77 Lakhs

List of sophisticated equipment :

- 5 litre Bio-reactor with automatic control and recorders
- UV Vis spectro-photometer
- Refrigerated centrifuge
- Computer: PC/AT & PC/XT, Printer with Auto CAD, Software and Drafting Accessories
- Laboratory Permroll Magnetic Separator
- B.O.D. Incubator Shaker

R & D Manpower

	Qualification	Full time
Scientific & Technical	Graduate	2
Social Sciences & Others	Post Graduate	1
	Graduate	1

Major achievements claimed

During the last two years the Institute has maintained its multifarious R&D as well as educational and training activities. It has obtained one major R&D project funded by Department of Biotechnology, Govt. of India, New Delhi in which it is collaborating with Chemical Engineering Department, Jadavpur University. In this emerging area of Downstream Processing in Biotechnology, 'Membrane Based Bioseparation Processes Using Affinity Ligands and Ultrafiltration', the Institute in collaboration with

Jaavpur University has already published one paper on 'Modelling and Simulation of the Washing Phase of an Affinity Ultrafiltration System' and another paper on 'Modelling and Simulation of the elution phase of an affinity ultrafiltration system' communicated in Separation Science and Technology journal.

Another Project on 'Process Engineering Development of a few industrial Enzymes' has been funded by Department of Science & Technology & NES, Govt. of West Bengal and work on this project has been progressing satisfactorily in collaboration with Department of Pharmaceutical Technology, Jadavpur University. One paper on 'Production of Microbiol Alkaline Protease' will be shortly presented at the All India Chemical Engineering Convention of the Institution of Engineers (India) at Roorkee. Another paper on affinity ultrafiltration will also be presented at this Convention.

Prof. Dr. R.N. Mukherjea was invited as a Distinguished Visiting Fellow at UDCT, Bombay University, where he gave a seminar on 'Applications of Membrances in Chemical & Biochemical Industries'. He was also invited by S&T Dept. of West Bengal to be the Chairman of a Task Force on Pollution Abatement and Control Technology for industries in West Bengal. The Institute has been requested by West Bengal Pollution Control Board to organize a national Workshop on 'Technology Options for Pollution Control in Paper & Pulp Industries' scheduled in November/December 1995. The Institute organised several courses on Computer Operation. One course was particularly organized for executives of Govt. Departments and undertakings.

Name and Designation of five Researchers

- Prof. Dr. R.N. Mukherjea, Hony. Director
- Shri S.R. Sen, Chemical Engineer & Hony. Treasurer
- Prof. P.K. Bose, Hony. Secretary
- Prof. S.K. Sanyal, Research Advisor (Chemical Technology)
- Prof. P. Bhattacharyya, Research Advisor (Biotechnology)

RESEARCH AND DEVELOPMENT CENTRE FOR CLAY ROOFING TILES, BRICKS AND OTHER CERAMIC PRODUCTS

Address:
Karnataka Regional Engineering
College Campus,
P.O. Srinivasnagar-574157,
Dakshina Kannada District,
Karnataka State.

Background

- Status of the SIRO** : Society
- Year of establishment** : June, 1992
- Major objectives** :
- (i) To undertake industry-specific/ sponsored research work related to improvement in quality of raw materials, process and product development, technology upgradation and productivity etc.;
 - (ii) To design and develop modern tile/ ceramic machinery, so as to fight obsolescence;
 - (iii) To act as a resource centre in this industry sector;
 - (iv) To provide testing and certification facilities for the industry, as required for raw materials and product testing;
 - (v) To carry out Energy Audit and suggest energy conservation measures and management in the tile industries;
 - (vi) To bring out documentation, technical literature on industry sector and disseminate the same.
- Major research areas** :
- (i) Alternative support structure for tiles,
 - (ii) Energy Audit,
 - (iii) Tile Drying
 - (iv) Glazing of tiles
 - (v) Reduction of Wastage of tiles;
 - (vi) Clay Characterization.

Income and R & D expenditure

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
Income			
Donations Received	Nil	Nil	Nil
Grants Received	Nil	9.00	28.00
Other income	Nil	0.13	0.75
Expenditure on R&D			
● Capital	Nil	2.90	8.18

● Recurring

Nil

2.21

1.61

Infrastructural facilities:

Land & Building

Land

: 3.09 acres belonging to Karnataka Regional Engineering College, Society has been leased to R&D Centre to put up buildings for laboratory, office, library and pilot plant shed.

Building

: Estimation for construction of Laboratory Rs.15.55 Lakhs

: (The building is under construction. The expenditure made upto now is Rs. 10.86 Lakhs).

R&D Manpower

Qualification

Full
timePart
time

(a) Scientific & Technical:

(i) Co-ordinator

-

1

(ii) Research Associates

Graduate

2

(b) Social Sciences & others

(i) Office Assistant

Graduate

1

Library facilities

:

Books: 9; Periodicals

:

2

Major achievements claimed:(i) *Alternative Supporting Structure for Tiles Roofs:*

Cheaper material for supporting the tiles is thought of in place of presently used timber which is very expensive. Concrete rafters of different types have been designed and tested for its strength and optimum cross section is obtained. It is reported that there is a saving of 40% in cost compared to that of timber.



Experimental Unit on Drying of Tiles

(ii) *Tile Drying:*

An experimental unit for tile drying is fabricated. The drying was carried out using heated moist air. It is gratifying to note that it was possible to dry the tile in about 6 hours time. This result is being tried in one of the tile factories in Mangalore.

(iii) *Clay Characterisation and Glazing of Tiles:*

Clay Characterisation was carried out using samples of clay obtained from different places. Glazing of tiles is being tried and useful results are obtained.

Name and Designation of five Senior Researchers

- Dr. S. Upendra Shenoy, Professor
- Dr. M.S. Kamath, Professor
- Dr. S.S. Bhavikatti, Professor
- Dr. K. Laxminarayan Bhat, Professor
- Sri S. Sridhar Panchamal, Industrialist

SANGEET RESEARCH ACADEMY

Address

1 Netaji Subhas Chandra
Bose Road Tollygunge
Calcutta 700 040

Background

Status of the SIRO : Institution
Year of establishment : 1980
Major objectives : To conduct all kind of scientific research in various aspects of Indian Classical music and other allied sciences with an objective to standardise the training and evaluation procedures, preservation of the teaching techniques and the music in a long life noise free media and to design, develop, standardise and synthesize the musical instruments.

Major research areas : Speech and Musci —
(i) Signal Processing
(ii) Synthesis
(iii) Acoustic Phonetics
(iv) Pattern Recognition
(v) Production & Perception Mechanisms.

Initial recognition as SIRO : 1983

Income and R & D expenditure

		<i>(Rs. in lakhs)</i>		
<i>Income</i>		<i>1992-93</i>	<i>1993-94</i>	<i>1994-95</i>
Donations Received	:	15.00	Nil	Nil
Grants Received	:	Nil	Nil	Nil
Other income (Bank Interst)	:	2.51	1.73	0.59
<i>Expenditure on R & D</i>				
• Capital	:	0.027	Nil	Nil
• Recurring	:	16.86	5.15	4.63

Infrastructural facilities

Land Building : Housed in monthly tenancy building.
(417 Sq. Met.)

Equipment facilities : Gross Value : Rs. 44 Lakhs

List of sophisticated equipment :

- (i) Facilities available — Sound proof Studio with low reverberation time, Noise free recording in the full audio range, Sound measurement, testing and analysis in the audiometric laboratory.
- (ii) Major equipments — H.P. computer (Model 9836 CS) with 7 channel programmable 12 bit A/D card, Hard disk, Tape drive, Printer and Winchester disc drive, High Speed Data Acquisition System (H.P. 3852 S), Iwatsu Signal Analyser (SM-2100B) with Basic programming facility, Digital Plotter, DSP Sonagraph with Colour Monitor (Kay 5500) having computer interface, Wipro Genius 486 PC/AT (having 4 MB RAM, 170 MB Winchester

disc drive, Colour Monitor, VGA interface), Sound recording and test equipments.

R&D Manpower

	Qualification	Full time	Part Time
Scientific & Technical	Doctorates/Post Graduates	2	2
Social Sciences & Others	Post Graduates/Graduates	3	-

Library facilities

: The Library has collection of rare books and foreign journals/magazines, appropriate for research in Speech/Music field.

Major achievements claimed

• New Techniques/methodologies developed and implemented :

- (i) Study on the membranophonic musical instruments viz. Tabla, Dhol etc. yielded many interesting results and in the process an improvement was made on the measurement technique of the fundamental frequency of individual strokes.
- (ii) The spectral features of the Tanpura sound was noted and the sound was simulated in a PC. Work is in progress to improve the quality of the simulated Tanpura sound.
- (iii) A new measurement technique for the extraction of 'Sruties' in a 'raga' was formulated. The said technique is more fast and shows the occurrence of the Sruties in 120 bins where each bin is of 10 cents. The study gives a detail information about the 'Sruties', as sung by the meastros in a particular 'raga'.
- (iv) Study on the role of higher format frequencies viz. F_5 , F_6 , F_7 , in the sung vowels of Indian Classical singing yielded some news informations which can be applied to assess the timbral quality of a singer.
- (v) Time domain study was made to observe the phonetic quality of

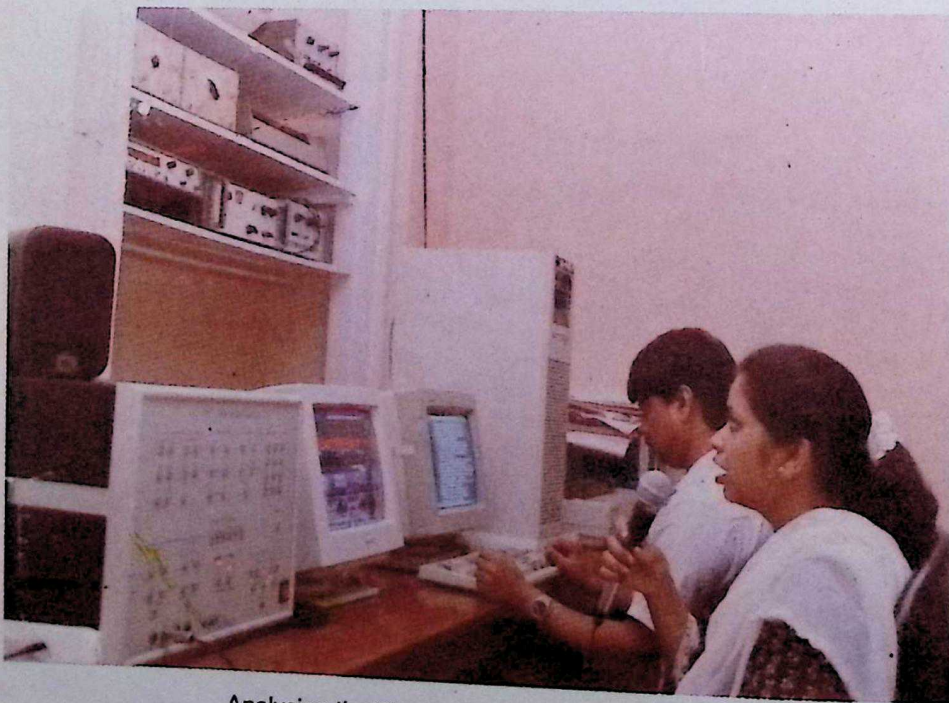
different sung vowels in Indian Classical singing. This method is more fast and attempt is being made to incorporate this technique in real-time applications.

(vi) Development of Software packages—

Synthesis of Tanpura sound
Pitch change
Fundamental extraction
Noise reduction
Measurement of 'Srutis'
Digital filters.

● New Techniques/methodologies developed and implemented :

- (i) The spectral features of the Tanpura sound was noted and the sound was simulated in a PC. Work is in progress to improve the quality of the simulated Tanpura sound.
- (ii) A new measurement technique for the extraction of 'Sruties' in a 'raga' was formulated. The said technique is more fast and shows the occurrence of the 'Sruties' in 120 bins where each bin is of 10 cents. The study gives a detailed information about the 'Sruties', as sung by the maestros in a particular 'raga'.



Analysing the Singing Voice in the Laboratory

(iii) Development of Software packages—

- (a) Synthesis of Tanpura sound
- (b) Pitch change
- (c) Fundamental extraction
- (d) Noise reduction
- (e) Measurement of 'Srutis'
- (f) Digital filters.

● Research papers/Reports Published : 8

● Seminars/Conferences
attended/organised : Attended - 4
Organised - 1

● Awards won : 'Award of honour' from the Acoustical Society of India during the year 1994 for research activities on music.

Name and Designation of Senior Researchers

- Dr. Ranjan Sengupta, Senior Research Scientist
- Shri Nityananda Dey, Research Scientist

SARDAR PATEL RENEWABLE ENERGY RESEARCH INSTITUTE

Address

P.B. No. 2
Vallabh Vidyanagar-388 120
Gujarat

Background

SPRERI is a R&D Institute established in 1979 to conduct research, development and extension activities in Solar Thermal, Biogas and Biomass Gasification Technologies. The Institute also offers Ph.D. programme in Renewable Energy Sources.

Initial recognition as SIRO : 1986

Income and R & D expenditure

	(Rs. in Lakhs)		
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations Received	-	-	0.30
Grants Received	33.23	27.91	38.40
Other income	3.52	3.72	3.15
<i>Expenditure on R&D</i>			
• Capital	4.98	4.83	16.20
• Recurring	27.69	25.89	27.70

Infrastructural facilities

Land	: Area: 10,000 Sq m.
Building	: Area: 1,300 Sq. m.
Equipment facilities	: Gross Value: Rs. 74.60 Lakhs

List of sophisticated equipment :

Data loggers
Computer facility
Metrological station
High vacuum pumping systems
Electronic balances
Emissometer
Gas chromatograph
UV VIS Spectro - Photometer
Flame photometer
Auto Titrator
Environment rotary shaker
Laminar air hood chamber
IMEP meter
Smoke meter
Combustion gas analyser

R&D Manpower	: Qualification	Full time
Scientific & Technical	Doctorates	6

	Post Graduates	7
	Graduates	7
Social Sciences and other		25
Library facilities	: Books	500
	Reprints	1000
	Journal/Magazines	35

Major achievements claimed

- Technologies developed and transferred for upscaling/commercialization
 - Solar Thermal Refrigerator
 - Low Cost Sola Still
 - Biogas plants based on kitchen waste.
 - Natural draft gasifier system suitable for chilly drying
 - 3.7 kw wood based gasifier system for water pumping
- Technologies developed and ready for upscaling
 - Solar driers
 - Fluidized bed heat exchanger
 - Solar sterilizer
 - Anaerobic filter for liquid effluents
 - Biphasic technology for agricultural residues.
 - updraft gasifier burner system for thermal application
 - 20 kw agril. residues based gasifier system for power generation
 - 20 kw rice husks based system for power generation
- New Techniques/methodologies developed and implemented
 - Solar drying of agricultural products
 - UASB and ANRBC for liquid effluents
 - Natural draft based gasifier system
- Patents Filed
 - Solar Thermal Refrigerator
 - Solar still
 - Biogas plant based on kitchen waste
 - Biogas system for biomethanation of agricultural residues



50 kw Groundnut shell based Gasifier for power generation

- Research papers published : 21
- Report published : 29
- Seminars.Conferences attended : 15
- Other

Institute has developed
BIS approved test
facilities for solar thermal
devices.

Name and Designation of Senior Researchers:

- | | |
|----------------------|--------|
| ● Dr. G.P. Nagori | P.S.O. |
| ● Dr. T.K. Chaudhuri | P.S.O. |
| ● Mr. S.K. Philip | P.S.O. |
| ● Dr. K.N. Patil | S.S.O. |
| ● Mr. S.R. Patel | S.O. |

SATYENDRA NATH BOSE NATIONAL CENTRE FOR BASIC SCIENCES

Address
3-17, Sector-1,
Lake City,
Calcutta-700064.

Background

Status of the SIRO	:	Institution
Year of establishment	:	June, 1986
Major objectives	:	To conduct original research in theoretical and mathematical sciences; To provide a forum of personal contacts and intellectual interaction among scientists within India and also between them and scientists abroad.
Major research areas	:	Physics, Chemistry and Mathematics
Initial recognition by DSIR	:	November, 1989

Income and R & D expenditure:

		(Rs. in lakhs)		
Income		1992-93	1993-94	1994-95
Donations received		0.75	0.325	0.25
Grants received	Non-Plan	15.00	20.00	21.00
	Plan	160.00	227.00	140.00
Other income		NIL	NIL	NIL

Expenditure on R & D

● Capital:	197.14	216.30	182.10
● Recurring:	49.82	57.36	67.94

Infrastructural facilities:

Land	:	● Land : Area 15 acres;
Building Area	:	Value : Rs. 110 lakhs
	:	● Building : Rs. 415 lakhs
Equipment facilities	:	Gross Value : Rs. 42 lakhs
List of sophisticated equipments	:	● HP 9000 Computer with 8-pin colour plotter and printer ● PC (386), PC (286), PC (486) & transputer for parallel computation & laser printer ● Tubular Furnace ● Digital Multimeter ● Digital Signal Processing Lock-in-amplifier ● Sensitive Digital Voltmeter

R & D Manpower :

	Qualification	Full Time	Part Time
Scientific & Technical	Doctorates	25	1
	Post Graduates	1	Nil
	Research Scholars	13	Nil

Library facilities:

: The Library contributes to 11 foreign and 11 Indian Journals. It subscribes to preprint services & electronic mail bulletins in High Energy Physics and Condensed Matter Physics. It provides extension xerox facilities to users.

Major achievements claimed :

The Centre has been very active in basic researches in condensed matter physics, particularly in calculation of properties of alloys, disordered systems and high temperature superconductivity. As a forum of interaction, it has organised numerous symposia and schools. In 1994, it celebrated S.N. Bose birth centenary by organizing an international conference on 'Bose and 20th Century Physics'. It has brought out 2 volumes. 'S.N. Bose : The Man and his work' containing Bose's collected scientific papers, his life and other writings.

	1992-93	1993-94	1994-95
● Research papers in Scientific Journals	32	15	33
● Research papers/articles in Symposia/Conference	6	5	10
● Miscellaneous Publications	4	7	7
● No. of Books published	0	1	2
● No. of Ph.D.'s	1	0	1
● No. of Conference/Symposia organised/sponsored	11	7	5

Name and Designation of five Senior Researchers

- C.K. Majumdar, Director
- S.K. Bose, Professor
- P. Ghose, Professor
- A. Mookerjee, Professor
- S.K. Sharma, Reader

SAURASHTRA UNIVERSITY

Background

: Saurashtra University came into existence in 1967 under the stewardship of the renowned educationist late Shri Dolarrai Mankad. In the beginning the UGC granted permission to start only two post graduate departments. Accordingly Department of Bioscience was started at Rajkot campus and Department of Chemistry was started at Bhavnagar campus. Thenafter other departments were started at Rajkot and Bhavnagar.

In 1980 the Bhavnagar campus was converted into a separate University dividing the assets of Saurashtra University on as is where is basis. Thus the present department of chemistry at Rajkot was started a new in 1980. Dr. V. M. Thakore, a retired professor or chemistry was selected to act as the first Head of the department for two years.

Income and R & D expenditure

			(Rs. in lakhs)
<i>Income</i>	1992-93	1993-94	1994-95
Donations Received	Nil	Nil	Nil
Grants received	5.30	5.60	7.02
Other income	Nil	Nil	(US \$ 5000)
<i>Expenditure on R & D</i>			
• Capital	Nil	Nil	
• Recurring	1.50	1.80	2.30

Infrastructural facilities

Equipment facilities : Gross Value : Rs. 50 Lakhs

List of sophisticated equipemnt :

- IR Spectrophotometer
- UV-VIS Spectrophotometer
- Gas Chromatograph
- NMR Spectrophotometer

R & D Manpower

	Qualification	Full Time
Scientific & Technical	Doctorates	11

Major achievements claimed

- The thrust in research activity is laid on synthetic chemistry. Various organic moieties have been synthesised and studied for their therapeutic and agricultural activities. The other field of research is the isolation and characterisation of active chemical constituents from the medicinal plants and marine sources. Synthesis of new polymer materials and their characterisation is undertaken by some scholars while synthesising new complexes is undertaken by students of inorganic chemistry. As many as 84 students have

obtained their Ph.D. degree during last about fifteen years under different faculty members. A large number i.e. 34 scholars did their Ph.D. under Dr. A.R. Parikh while sixteen got it under Dr. Mrs. H.H. Parekh.

- ii) The department being actively engaged in chemical research has got more than 500 research articles published in national and international scientific journals. Almost all the teachers have presented their research work at different national and international seminars and conferences. Coming across these publications two American firms offered to collaborate in enhancing and encouraging the research efforts of the department.
- iii) DuPont Agricultural Products company is interested in testing the newly synthesised compounds for any kind of agricultural activity such as pesticidal, insecticidal, growth promoting etc. During last two years they have examined more than 200 new compounds for which they paid the department about 20000 dollars.

Similarly Merck Research Laboratory of Rahway, N.J., USA has also asked for several samples for testing various types of therapeutic activities such as anticancer, antibacterial, cardiac antihypertensive, antiinflammatory etc. This company has also constructed to pay 50 dollars per 20 mg sample for testing.

American National cancer Research Institute at Bethesda, USA is also showing interest in the new compounds for testing their anticancer and anti HIV activity. Six compounds sent by Dr. A.J. Baxi have been shown to possess moderate anti HIV activity and are being further investigated.

- iv) In so far as personal achievements are concerned Head of the department of chemistry visited USA under Indo-US exchange programme sponsored by CSIR during 1985. He visited Cincinnati and Ohio state Universities and Birmingham University at Alabama in USA. Another member attended the international research seminar on Natural products held at Bonn in Germany and worked with Dr. Blombitza, a renowned scientist in the field of marine natural products.

The member also visited university of Brunel at London. She was invited to write a review article on NMR spectrometry for publication in an encyclopedia being published by Academic Press, London.

Another faculty member also visited USA twice. He presented a paper at an international research seminar held at Chicago, USA. He was also appointed as a WHO short term consultant on traditional drugs to Govt. of Sri Lanka. Another faculty member also visited USA and presented a paper at the National Organic Symposium held at Williamsburg, Virginia USA.

- v) Department of Chemistry has also framed a syllabus to introduce studies in petroleum products. This would be an ancillary in preparing technocrats, petroleum chemists etc. for the multi crore refineries coming up near Jamnagar in Saurashtra.

Name and Designation of Researchers

- Prof. (Mrs.) H. H. Parekh, Professor
- Prof. A. J. Basu, Professor
- Dr. N. A. Chauhan, Reader
- Dr. A. K. Shah, Sr. Lecturer
- Dr. V. H. Shah, Sr. Lecturer
- Dr. V. V. Manvar, Reader.

SCIENCE & TECHNOLOGY ENTREPRENEURS, PARK

Background

Address
Guru Nanak Dev Engineering
College, Gill Road,
Ludhiana-141 006.

: Guru Nanak Dev Engineering College, Ludhiana, the host of the STEP, is a Premier institution engaged in High quality teaching, Research and developmental activities. The Guru Nanak Dev Engineering College maintains good interaction with the industries in and around Ludhiana. The STEP was established to strengthen this interaction further as well as for providing facilities to the budding entrepreneurs, from S&T stream to become successful entrepreneurs through commercialising some of the technologies developed by the institute as an out come of its research work.

Year of establishment

: 1953

Major objective

- : i) To conduct research work on various aspects of Entrepreneurship in the state of Punjab and the neighbourhood.
- ii) To under take research activities by itself or in collaboration with institutions like NRDC and other organisations/industry.
- iii) To organise studies and industrial research with the help of experts in the specific branch of Engineering like machine tools, sewing machines & cycles and knitting machines Electronics etc.
- iv) To act as an interface between the institute of learning research and industry to provide an environment for creative and constructive interaction and entrepreneurial activities.

Major research areas

- : (i) Machine tools
- (ii) Automation & controls
- (iii) Electronics and computer application Based industry
- (iv) Pollution control devices

Initial recognition by DSIR

: 1988

Income and R & D expenditure

<i>Income</i>	1992-93	1993-94	(Rs. in lakhs) 1994-95
Grants :			
• Capital	35.00	NIL	
• Recurring	2.94	3.86	NIL 4.00
Expenditure on R & D			
• Capital	46.12	2.62	
• Recurring	2.33	3.83	2.96 4.09

Infrastructural facilities

Land & Building : Area : 30,000 sq.ft. covered area costing
Value : Rs. 43.16 lakhs

Equipment facilities : Gross value : Rs. 70.8 Lakhs

List of sophisticated equipment:

- CNC Kirloskar lathe with companion microprocessor controlled, Turnet tool head.
- Plastic injection moulding machine (Klockner Windsor).
- Fluidised bed heat treatment unit.
- Well equipped computer centre.

R & D Manpower:

	Qualification	Full time	Part time
Scientific & Technical	Post Graduates	4	25 (Honst Inst.)
Library facilities	: Host Institution 50,000 volumes on various subjects. Peripherel Library facilities on Entrepreneurship and allied subjects in the STEP.		

Major achievements claimed

- Technologies developed and transferred for upscaling/ commercialisation
 - i) Software for vendor analysis and quality control for M/s Bharti Telecom Ludhiana
 - ii) Software package for export process control and documentation for export industry.
- Technologies developed and ready for upscaling and new techniques/methodologies developed
 - Uninterrupted power supply units.
 - Invertor for Domestic application.
 - Variable speed AC Motor Drive.
 - Induction motor drive.
 - Servo Control stabilisers.
 - 4 channel medical scanner with display.
 - Push button telephone receiver.
 - 8 channel data logger.
 - Automatic system for Industrial process-Milk collection, distribution and payment. VERKA MILK PLANT.

- 6502 Based Micro processor kit.
- Speed control of DC motor with micro processor.
- Micro processor based digital clock.
- Digital Voltmeter.
- Digital frequency meter.
- Pulse width modulator inverter.
- Power factor control system.
- Micro process based traffic control system.
- Dividing head of a milling machine using micro processor.
- Automatic Irrigation System.
- Microprocessor based car parking system.
- Computer based transmitter.
- Microprocessor controlled real time switching system.
- Vacuum Moulding Technique.
- Binderless moulding process.
- Full mould process.
- Automatic programmed dishwasher.
- Robotic arm for material handling.
- Improved shell moulding machine.
- System to run a two stroke scooter engine on LPG.
- Air pollution control system for a small induction Furnace.
- Low cost curtain type spray gun.
- Pneumatically controlled robot arm.
- Petrol-Ethanol and petrol-methane blends for replacement of the use of petrol for two stroke petrol engine.

● Seminars/Conferences attended/organised

: 5

● Awards won

- i) First prizes (by the host institution) in National Engineering Exhibition at TRYST organised by the Academic interaction Council IIT Delhi.
- ii) 1990-Automatic programmed Dish Washer.
- iii) 1994-New technique for PCB Assembling.

Name and Designation Senior Researchers

- Prof. Pritpal Singh, Director
- Dr. S.B. Singh, General Manager
- Dr. R.S. Seehra, Consultant
- Prof. Kanwaljeet Singh, Consultant

SCIENCE & TECHNOLOGY ENTREPRENEURSHIP PARK ROORKEE

Address
Science & Technology
Entrepreneurship Park Roorkee
University of Roorkee
Roorkee-247 667 (U.P.)

Background :

Established in the year 1987 as a Society of University of Roorkee. Promoting entrepreneurship and R & D activities for establishment in the front areas for the industrial sector including diversification of old units in the area of electronics, survey instruments etc.

Income and R & D expenditure :

	1992-93	1993-94	(Rs. in lacs) 1994-95
<i>Income</i>			
Donations Received	Nil	Nil	Nil
Grants Received	8.42	3.96	4.78
Other Income	Nil	Nil	Nil

Expenditure on R & D :

● Capital	0.62	1.66	2.72
● Recurring	3.91	4.21	5.34

Infrastructural facilities :

Land & Building : 2145 Sq.M including 455 Sq.M covered area in the main area of University of Roorkee.

Equipment Value : Rs. 15.00 lacs within the STEP. However, STEP Roorkee is utilising infrastructural facilities and equipments with University of Roorkee.

R & D Manpower :

	Qualification	Part time
Scientific & Technical	Post Graduate	4
Social Sciences & Other	Ph. D.	1

The services of University faculty over 400 in number is available to STEP, Roorkee.

Library facilities : STEP Roorkee library possesses a collection of over 1200 books/publication/covering the major areas of Technology, Management & Human Resources Development. Important journals/industrial publications and current gazetted documents of Govt. of India are received regularly.

Major Achievement Claimed :

Tecnologies developed and ready for upcaling

- Phase angle meter.
- Real time monitoring of ECG & Disease classification using a PC
- Design and fabrication of LPG fired domestic purpose Water heater
- On line data acquisition and control of industrial parameters
- Application of LPG in multicylinder spark ignition engines
- Digital frequency display (DFD) for radio receiving
- PC based TCP/IP server;
- Computer Aided Testing of Energy meters;
- Prediction of pattern dimensions of full Mould Precision Casting;
- Videophone System Using DPCM Coding;
- A constant streass (Tension - compression) testing machine;

- On line general purpose Dynamic Balancing Machine
- Operation Service Determinator;
- Silencer and enclosur for a generator jet to reduce environmental noise;
- LPG Cooking range including grill & oven;
- Microprocessor band Tariff meter;
- Signal Transmission Circuit for Application in industrial Environment;
- machine Recognition of Hand written sentences
- *New Technique/Methologies developed/Implemented*
 - Design and Fabrication of Programmable Logic Controller;
 - Design & Fabrication of Voice Print Analyser/Speech Recogniser;
 - Design & Fabrication of a machine for Extrusion MIED Recycling of Plastic Waste;
 - Effect of Heat Treatment on Thickness of Interface Mett. Engg. between LM 11 Al Alloy and Stainless steel;
 - PC Based Monitoring of Indl. Motors/Drives.
 - Design & Development of Working Model of a Cross Flow Turbine of 5 KW
 - Study and Design of an Efficient Gur Plant
- *Seminars/Conferences/organised:*
 - Institutional & Industrial Relation workshops are being organised annually for last 3 years.
 - 4 Short term training courses on Industry related topics
 - Organised one national workshop on Management Excellence;

Name and Designation of Senior Researches

- Dr. M.L. Kapoor, Prof.; Mett. Engg.
- Dr. R.P. Agarwal, Prof., Electronics & Computer Engg.
- Dr. S.C. Jain, Prof., Mech. & Ind. Engg.
- Dr. H. Sinvhal, Prof., Earth Sciences
- Dr. S.P. Gupta, Prof., Elect. Engg.

SCI TECH CENTRE

Background

Status of the SIRO : A company limited by guarantee under Section 25 of the Companies Act.

Year of establishment : 1971

Major objectives:

- (1) To undertake, conduct, carry on or help to carry on scientific research for the extension of knowledge in the fields of natural and applied science.
- (2) To undertake, conduct, carry on or help to carry on research and other scientific work in connection with any industry and in particular the engineering industry, which research and other scientific work may be, among others, in the following directions:-
 - Investigation into the usability and improvement of materials used in industries.
 - Investigation into the utilisation of the products of industries.
 - Investigation into and improvement of machinery, components and appliances used by the industries.
 - Investigation into and improvement of processes of manufacture and discovery of new processes with a view to securing greater efficiency, rationalisation and reduction of costs.
 - Discovery or invention of new machines, processes, products or raw materials.
 - Investigation and research into the conditions of work, time and motion studies, fatigue and rest pauses, standardisation of the methods of work conditioning of factories and diseases and accidents arising out of employment in industries.

Major research areas : Pharmaceutical Engineering, Dosage Forms, Agro-vet and General Research.

Initial recognition as SIRO : 1973

Income and R & D expenditure

	1992-93	1993-94	(Rs. in lakhs) 1994-95
<i>Income</i>			
Donations Received	Nil	Nil	2.25
• Grants Received	Nil	Nil	Nil
• Other income	98.95	164.98	353.45
<i>Expenditure on R&D</i>			
• Capital	39.28	6.79	2.98
• Recurring	104.27	136.45	123.97

Infrastructural facilities

	(Rs. in lakhs)
Land & Building	: (Value) Rs.257.69 lakhs
Equipment facilities	: Gross Value (Rs. in lakhs) 82.27

List of sophisticated equipment

Precision Centre Lathes
 Hydraulic universal grinding machine
 Hydraulic surface grinding machines
 Precision vertical milling machines
 Single column Jig Boring machine
 Profile Projector
 Hydraulic Press
 Microscope
 Polishing Machine
 Measuring equipment
 Test equipment
 Multi-meters
 Precision measuring equipment
 Frequency convertors
 Gauges
 Micro Meters
 Temperature controllers
 Oscilloscope
 Data logger
 Isolation transformers
 Computers
 Air Compressors
 Office equipment etc.

R&D Manpower :

Scientific & Technical
 Social Sciences and Others
 Library facilities

Qualification	Full Time
Graduate/others	57

: SCITECH Centre has a fully equipped library consisting of several thousands of books. It also subscribes to many scientific and technical magazines. SciTech Centre has a drawing and a reference room where all technical drawings are catalogued and kept under climate-controlled condition. SciTech Centre has a micro-filming facility and all documents and micro films are also kept in a climate-controlled room.

Major achievements claimed**• New products/methods developed:**

- (i) Basic studies in design and development of a prototype dip bath for holding viscous material for making veterinary dosage forms.
- (ii) Studies in the efficacy of micronutrients administered to fruiting plants and vegetables through soluble containers.
- (iii) Design and development of a low cost closing unit for a semi-automatic soluble container filling machine.
- (iv) Research, design and development of a state-of-art high speed fully automatic, computer controlled prototype for manufacturing high quality soluble containers.

- (v) Development of a novel pneumatic conveying arrangement for light-weight items.
- (vi) Research and Design development of a special purpose device for making soluble containers, incorporating tamper-proof safety features, and building a prototype.
- (vii) Design and development of Interchangeable Sections for a veterinary dosage printing machines.
- (viii) Design of a special purpose prototype for creating apertures in containers for packaging foam objects.
- (ix) Design and development of a prototype shell sleeve for a greasing unit for incorporating into an automatic soluble container manufacturing unit.
- (x) Design and development of a prototype electro-mechanical device for onward transmission of dip moulded pin bars, for incorporating into an automatic machine.
- (xi) Research, design and development of a prototype can milling device for incorporation three axes movement of the cutter and of the part being produced, conforming to a predetermined profile and parameters as reference.
- (xii) Design and development of a prototype sorting accessory for incorporating into a cutting and joining machine for making soluble containers for veterinary dosages.

● **New Processes developed:**

- (i) Studies on galactagogue formulations for use in veterinary practice.
- (ii) Studies on efficacy of probiotics for use in veterinary practice.
- (iii) Studies on Fertikit in Bovines.
- (iv) Studies on Jantana, a herbal preparation, in Dogs.
- (v) A new process of sowing seeds and/or fertilizers and/or micronutrients and/or agrochemicals for agriculture and afforestation with novel equipment.
- (vi) An improved process of circulating a viscous solution in a dip bath of an automatic dip moulding container machine.

● **Improvements of Existing products undertaken:**

- (i) Extensive research in the design and development of novel measuring devices for evaluating various physical parameters such as length, double wall thickness, hemispherical dome shaped ends, of cylindrical objects of graded volumetric capacities (Gauges).
- (ii) Ongoing research, design and development of a high speed prototype for filling soluble dosages for human consumption.
- (iii) Improvements in the design of a device to measure double wall thickness of cylindrical objects.
- (iv) Improvements in the design and development of a special purpose gauge for checking the thickness of hemispherical ends of cylindrical objects.
- (v) Research and design improvements in body collect cam of an automatic soluble container machine.
- (vi) Further modifications in the design and development of an improved prototype drive assembly for back lift.

Products/Processes/Methods/Techniques commercialised/implemented:

- (i) New process developed at ii) D is being commercialised at M/s. Mycon Pharma, Pune.
- (ii) Method developed at i) C is being tested for commercialisation jointly by M/s. Ranaday Micronutrients Pvt. Ltd., Pune and Konkan Krishividhyapith (KKV), Experimental Farm, Palghar (Maharashtra).
- (iii) New product developed at i) A is being commercialised at M/s. Custom Capsules Pvt. Ltd., Boisar.
- (iv) New products developed at i) B and i) D are being commercialised at M/s. PAM Pharmaceutical and Allied Machinery Co. Pvt. Ltd., Bombay.
- (v) Improved products developed at iii) A and iii) B are being extensively tested and commercialised at M/s. Associated Capsules Ltd., Bombay and M/s. Universal Capsules Ltd., Dahanu, Maharashtra.

● Patents Filed : 7

● Research papers/Reports published : 4

● Seminars/Conferences Attached/organised

November 18, 1993	Visveswarapura Inst. Pharma. Sc, Bangalore
November 19, 1993	Al-Ameen College of Pharmacy, Bangalore
November 30, 1993	K.M.K. College of Pharm. Bombay
December 03, 1993	K.M.K. College of Pharm.
December 07, 1993	K.M.K. College of Pharm.
December 17, 1994	Drug Inspectors, India
January 06, 1994	Jamia Hamdard, New Delhi
January 21, 1994	K.M. College of Pharm., Madurai
January 28, 1994	University Dept. of Chem. Technology, Bombay.
March 07, 1994	Bombay College of Pharm.
March 08, 1994	Bombay College of Pharm.
April 18, 1994	Victoria Jubilee Technical Institute, Bombay.

● Awards won : SciTech Centre has been honoured with Awards from:

1) The United Nations Industrial Development Organisation UNIDO]

2) Shri Amrut Mody Research Foundation

for scientific service, research and training rendered to the world community.

Name and Designation of five Senior Researchers

- Mr. Y. Apparao, Vice President, Research & Development in Design & Development
- Mr. R. S. Israni, Sr. Manager - Prototype Development
- Mr. P. H. Deshmukh, Sr. Manager - Research & Design
- Mr. D. S. Kondal, Sr. Manager - Research Design & Design
- Mr. C. P. Deodhar, Sr. Scientist - Research & Design

SHIVSADAN RENEWABLE ENERGY RESEARCH INSTITUTE

Address

192/3, Industrial Estate,
Sangli, 416416 (Maharashtra)

Background

Year of establishment : August 1988.

Major objectives

To establish and run different Post Graduate DEgree courses in the field of S&T and to undertake scientific R&D activities in the field of Renewable Energy Sources, Environment Pollution Abatement, Engineering, Agriculture and Agroforestry.

Major research area

The major R&D activities in which this Institution is presently engaged are Biogas technology, solar and wind energy utilization, waste water treatment by aquaculture method, plant tissue culture technology, agriculture and agroforestry.

Initial recognition by DSIR : March, 1994

Income and R & D expenditure

Income	1993-94	1994-95
Donations Received:	Nil	Nil
Grants Received:	8.01	1.8
Other income:	0.80	0.69

Expenditure on R&D

● Capital:	6.36	Nil
● Recurring:	2.10	1.77

Infrastructural facilities:

Land & Building : 1 ha/Rs. 2.5 lakhs and 12000 sqft/
Rs. 30.0 lakhs respectively
Equipment facilities : Gross Value: Rs. 10.0 lakhs.

List of sophisticated equipment

Gas-liquid chromatograph
UV/visible Spectrophotometer
Anaerobic Chamber/Incubator
High Speed cooling centrifuge
Laminar air-flow work station

R&D Manpower:

	Qualification	Full time	Part time
Scientific & Technical	Doctrate	1	1
	Postgraduate	1	1

Library facilities:

Collection of Books numbering 700 in the subject of biogas technology, microbiology, biochemistry, food Science, water pollution control and Engineerings. Scientific Journals from India and abroad on the above subjects.

Major achievements claimed:

- Technologies developed and transferred for commercialisation:

Development of prefab. R.C.C. fixed dome biogas plant which eliminates corrosion problem of steel gas holder & gas leakages from masonry dome and requires minimal maintenance cost. The parent Institution, the Shivsadan Sahakari Society has sold over 2500 biogas plants of sizes from 2m³ — 6m³ since 1990.

● *Technologies developed and ready for upscaling:*

- (i) Optimization of Engineering parameters such as depth of the water hyacinth pond, HRT in the pond, Length/Width ratio of pond and dilution of digested spentwash to treat distillery waste — and to generate resources like biogas, organic manure and treated water for agricultural use.
- (ii) Optimization of size and depth of water hyacinth pond, HRT in the pond and harvesting rate of water hyacinths to treat domestic waste water and to generate resources like biogas/organic manure and treated water for agricultural/ drinking purpose.

Research papers/Reports Published : Papers 5, Reports 3

Name and Designation of Senior Reserachers:

- Shri V.R. Joglekar, Director
- Dr. M.R. Dhawale, Sr. Microbiologist
- Shri N.L. Tikekar, Visiting Scientist
- Dr. G.P. Argikar, Consulting Agronomist

SHRI AMM MURUGAPPA CHETTIAR RESEARCH CENTRE

Address

TIAM House, 28, Rajaji
Salai, Madras-600 001.

Background

Status of the SIRO : Institution
Year of establishment : September, 1973
Major objective : Photosynthesis and Energy, Wind
Solar biomass, Renewable energy,
Rural Development, Industrial
Biotechnology, Engineering aspects.
Polyethylene fishing crafts.
Initial recognition by DSIR : April, 1973.

Income and R & D expenditure

	(Rs. in lakhs)		
Income	1992-93	1993-94	1994-95
Donations received	17.50	24.25	29.24
Grants received	19.57	17.83	21.00
Other income	2.78	8.12	2.26
<i>Expenditure on R & D</i>			
● Capital	2.18	2.65	2.07
● Recurring	38.38	45.38	41.22

Infrastructural facilities

Land & Building : Land taken on 30 year lease from the
Department of Technical Education
Government of Tamil Nadu, Madras.

Equipment facilities : Gross value : Rs. 1.61 Lakhs.

List of sophisticated equipments : Gas Chromatograph
- Bio-Engineering Fermentor
- Marubishi Fermentor

R & D Manpower

	Qualification	Full Time
Scientific & Technical	Doctorate & Post Graduates	28
Social Sciences and Others	Post Graduate & Undergraduates	37

Library facilities : A library equipped with Scientific,
Biotechnology, Life Sciences,
Microbiology and other Technical
books, Scientific and other journals &
Periodicals.

Major achievements claimed

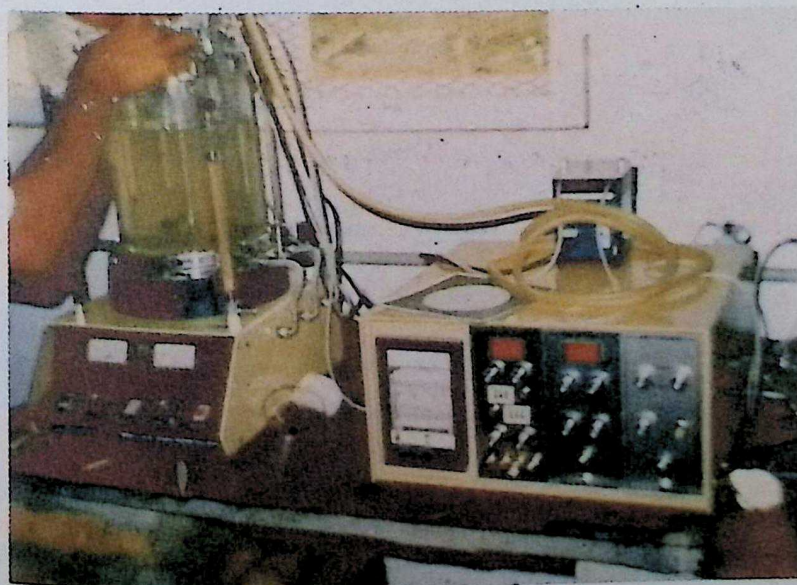
- Technologies developed and transferred for upscaling/
commercialisation:

- (i) Fabrication of large reactor vessels for mass culturing anaerobic phototrophic bacteria.
- (ii) Quality improvement of tea.
- (iii) Vermimanure.
- (iv) Solar stills. HDPE boats.
- Technologies developed and ready for upscaling:
 - Backyard cultivation of Spirulina for Earthquake Victims at Latur.
 - Biodynamic Gardening/Organic farming.
- New Techniques/Methodologies developed and implemented:
 - Biopulping in paper making from cellulose fibres and water conservation through mist technology.
- Patents filed:

3



Bio-Engineering Fermentor



Marubishi Fermentor

- Research Papers/Reports published: 5
 - Monograph: 4
 - Reports: 8
- Seminars/Conferences Attended: 10
 - Organised: 1
- Award won: 2
- Any other: Involved in imparting fermented food technology, algal cultivation, organic farming, vermiculture and screen printing to rural women. Also conducted training programmes and entrepreneurship programmes for students from CRENIEO, Madras, Women's Christian College, Madras & SNTD, Bombay.

Name and Designation of five Senior Researchers

- Dr. T.M. Vatsala, Director Technical
- Dr. C.V. Seshadri, Emeritus Scientist
- Mr. Joseph Thomas, Deputy Director - Administrator
- Dr. N. Jeeji Bai, Senior Scientist
- Dr. J. Vijayamma, Scientist

SHRIRAM INSTITUTE FOR INDUSTRIAL RESEARCH

Address
Main Laboratory,
University Road,
Delhi-110 007.

Background

Status of the SIRO

: The Shriram Institute for Industrial Research was founded in 1940 by Lala Shri Ram Non-profit, Self Supporting, independent, Contract research organisation. The Institute is a unit of Shriram Scientific and Industrial Research Foundation which is a registered society.

Year of establishment

: 1973

Major objectives

- : (i) Materials Science Division
- (ii) Analytical Science Division
- (iii) Life Science Division
- (iv) Support Services.

The branch laboratory at Bangalore is dedicated for Silk Research though work in other areas is also undertaken.

The Institute accepts sponsored research projects from industrial organisations, government and semi government agencies, international organisations and also undertakes in-house research programmes for various processes which are later leased out to industry.

Major research areas

- : Material Sciences, Polymers, Fibers, Chemicals, Analytical Sciences, Drugs & Pharmaceuticals, Paints, Metals and Minerals, Cements & Building materials, Chemicals & Pesticides, Life Sciences, monitoring and assessment of pollution, EIA Studies, toxicological studies and irradiation work using gamma rays for treatment of sewages and sludges, polymers & sterilization of medical and surgical products.

Income and R & D expenditure:

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations Received	Nil	Nil	Nil
Grants Received	384.1	411.9	511.8
Other Income	44.5	41.7	53.6
<i>Expenditure on R&D</i>			
● Capital	108.2	111.0	186.7
● Recurring	439.5	484.4	599.4

Infrastructural facilities:

Land & Building

- : 12000 Sq. m. — Delhi.
- 1800 Sq. m. — Bangalore.

Equipment facilities

- : Gross value: Rs. 708 lakhs

List of sophisticated equipment:

- Atomic Absorption spectrophotometer and complete range of other spectrophotometers
- XRF, Instron, Xenon test, TOC, On line Gas analysers
- DTA, DMA, TMA, DSC, HPLC, GC, TGA, Rhecord Plasticorder, Koka Flow Tester, FTIR, Gel Permeation chromatograph etc.

R & D Manpower:

	Qualification	Full Time
Scientific & Technical	Doctorates/Post Graduates	221
Social Sciences and others	Post Graduates/Graduates	65

Library facilities

: Library is equipped with about 20,000 books and bound volumes of old Journals. It is subscribing to around hundred Indian and foreign journals and has access to more than 500 International Databases through DIALOG (a Knight-Ridder Company) & STN International.

Major achievements claimed:

- Technologies developed and transferred for upscaling/commercialisation : (i) Sebacic Acid from Castor oil.
(ii) Cold water soluble strach
(iii) Precipitated Silica from rice husk ash
- Technologies developed and ready for upscaling : (i) Plastic wares for biotechnology.
(ii) Pressure sensitive adhesive for stickers.
(iii) Use of fly ash in making cement
(iv) Synthesis of Vinylidene fluoride
(v) Process for polymerisation of Vinylidene fluoride
(vi) Polymer modified portland cement
(vii) Toxicological data for agrochemicals, pharmaceuticals, cosmetics and detergents.
(viii) Improvement in crease recovery and colour fastness of silk fabrics.
(ix) Development of PVC blood bags.
(x) Process for purification of Norfloxacin & Lindane.
(xi) PET & PBT blends.
(xii) Sodium Starch Glycolate.
(xiii) Latex based products from Cactus type plants.
- New Technologies/methodologies developed and implemented : (i) Shoe sole sealing adhesive
(ii) Method for estimation of:
 - Pentachloro-phenol and Benzidine in leather and textile products.
 - Di-2-ethylhexyl phthalate in Blood.
 - Residual pesticides in food products.

- Nickel in Chocolate.
- Azadirachtin in Neem oil based pesticides.
- (iii) Cold water soluble strach
- (iv) Precipitated Silica from rice husk ash.

- Patents Filed : 31
- Research papers/Reports Published : 28
- Seminars/Conferences attended : 22
- Seminars/Conferences organised : 3

Name and Designation of five Senior Researchers:

- Dr. D. A. Dabholkar, Director
- Dr. H. C. Jain, Dy. Director (Chemical Engg.)
- Dr. V. P. Malhotra, Dy. Director (Polymer)
- Mr. R. K. Banerjee, Dy. Director (Life Sciences).
- Mr. K. K. Juneja, Dy. Director (Analytical Sciences).

SMALL INDUSTRIES TESTING AND RESEARCH CENTRE

Address

25-A, Avarampalayam Road,
R.K. Puram (PO),
Coimbatore-641 006.

Background

- Status of the SIRO : Registered society under the Tamil Nadu Societies Registration Act 1961.
- Year of establishment : March, 1987
- Major objectives : It is a service organisation dedicated to Small Industries and its objectives are testing, R&D, consultancy and Retraining in a wide range of Mechanical, Electrical and Electronic Engineering, Chemistry and Material to customer requirement.
- Major research areas : Pump & Motor design

Initial recognition by DSIR : May, 1989

Income and R & D expenditure

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations Received	0.05	Nil	0.20
Grants Received	Nil	Nil	Nil
Other Income	12.63	14.59	9.53
<i>Expenditure on R&D</i>			
• Capital	4.48	5.15	0.96
• Recurring	14.10	13.22	11.47

Infrastructural facilities

- Land & Building : Land 1.95 Acres
Building: 7299.46 Sq. ft.
- Equipment facilities : Gross Value Rs. 43.36 Lakhs.

List of sophisticated equipment :

The laboratories are well equipped with sophisticated facilities like Digital tachometer, Electrical Control Cubicles, High Voltage tester, Spectrophotometer, Carbon, Sulphur analyser, Elongation tester, Digital VLCR meter, etc.

R & D Manpower

Qualification	Full time
Scientific & Technical	12
Social Science	2
Others	11

- Library facilities : Library contains 600 volumes of technical and scientific books.

Major achievements claimed

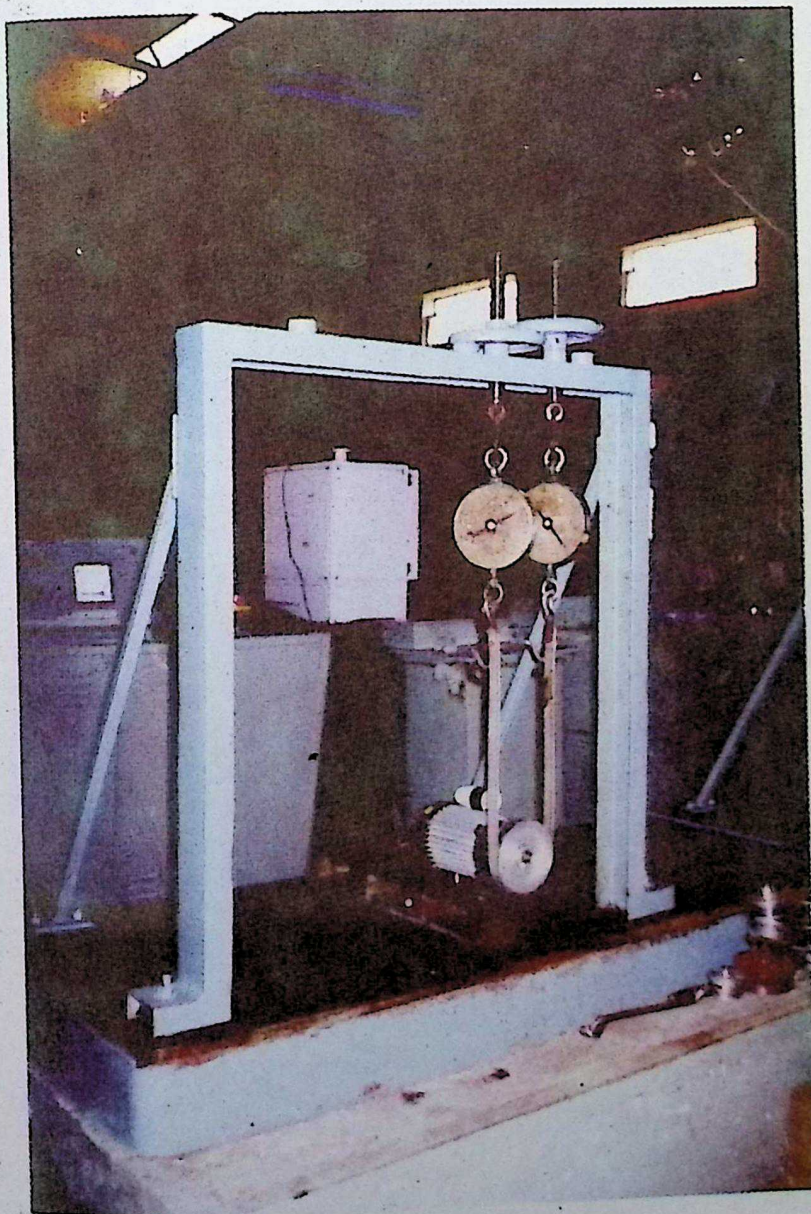
- Technologies developed and transferred for upscaling/ commercialisation

: Prototypes of energy efficient and cost optimised monoblock pumpsets SiTarc Mark I, II & III alongwith 2.2 & 3.7 Kw motors and effective technology transfer manuals for above have been developed.

Research Paper/Reports published	:	1
Seminars/Conference attended/organised	:	9
Seminars Attended	:	7
Courses organised	:	Testing of pumps and motors 2

Name and Designation of five Senior Researchers

- K.A. Rahiman Director
- G Noor Muhammed Asst. Director (M&MS)
- M. Thenmozhi Electrical Engineer
- P Karuppuswamy Mechanical Engineer
- M K Subaithabanu Test Engineer (Pumps)



Motor Division

SOCIETY FOR COMPUTER TECHNOLOGY AND RESEARCH

Address:

No. 27, Pune Satara Road,
Dhankavadi,
Pune-411 043

Background

- Year of establishment : 1990
- Major objectives : To carry out research and development activity in the field of computer technology and related area.
- Major research areas : System Software Development, Compilers Interpreters; Process Control; Digital Signal Processing; Design of Electronic Circuits;
- Initial recognition by DSIR : April, 1990

Income and R & D expenditure

	1992-93	1993-94	1994-95 (Provisional)
<i>(Rs. in lakhs)</i>			
<i>Income</i>			
Donation Received	0.20		1.50
Other income	1.88	1.16	
<i>Expenditure on R&D</i>			
• Capital	1.00	-	-
• Recurring	1.08	1.16	1.49

Infrastructural facilities

- Land & Building : Society has 5 acres of land. R&D is housed in an independent LAB
- Equipment facilities : Computer Systems And Peripherals, Motorola 68K Kit, Television.

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical	Ph.D.	—	1
	Post Graduates	—	4
	Graduates	1	—

- Library facilities : Adequate library facilities are available.

Major achievements claimed

- Technologies developed and ready for upscaling:

(i) Circuit Station

Circuit Station is a comprehensive software package for Schematic Design, PCB Design and Simulation of Electronic Analog/Digital Circuits. It is aimed at the amateur/professional developer of electronic circuits, to provide a seamless environment for developing circuits from scratch to final PCB generation. It is extremely easy to use because of its SAA compliant GUI in MS-Windows and provides the necessary interface to other similar packages for interoperability.

(ii) 68HC16 Work-Bench

Work Bench consist of On Line Assembler, Simulator and Link to Download.

On Line Assembler - Tool developed with the aim of time saving and providing ease in debugging. Two main advantages are, Syntax error free code and Efficient CPU utilization.

Simulator - It Provide different windows under one screen viz. Register, Memory, Program, Instruction Pointer, and Help Windows

Link to Download - Concept of Embedded system has been used.

Seminar/Conferences attended/Organised :

Workshop on Advances in Computer Technology January 1993

- Any Other : Signed 2 MOA with Motorola, as Industry-Institute relationship program.

Name of Senior Researchers :

- Dr. R.S. Nikam
- Mr. V.S. Bapat
- Mr. S. M. Joglekar
- Prof. B.M. Hooli
- Asst. Prof. S.A. Joshi
- Mr. R.S. Dangre

SOCIETY FOR DEVELOPMENT ALTERNATIVES

Address

B-32 Tara Crescent
Qutab Institutional Area,
New Delhi-110 016.

Background

- : Research, Development & Consultancy organisation.
- Year of establishment : 1987
- Major objective : Designing and implementing strategies for sustainable development.

Income and R & D expenditure

		(Rs. in lakhs)	
	1992-93	1993-94	1994-95
<i>Income</i>			
Grants reimbursement/Received	170.00	209.00	251.00
Other Income	10.00	6.00	12.00
<i>Expenditure on R&D</i>			
● Capital	2.50	0.12	2.50
● Recurring	155.00	163.00	233.00

Infrastructural facilities

- Land & Building : Area — 0.75 acres; Value — 24.00 Lakhs
- Equipment Facilities : Gross Value : Rs. 93.00 Lakhs

List of sophisticated equipment :

- HP Draftmaster Plotter
- Air Monitor
- Audiometer
- Digital Spectro Photometer
- Wind Monitor
- BOD Incubator

R & D Manpower

	Qualification	Full time	Part-time
Scientific & Technical	Doctorates.	—	4
	Post Graduates	2	2
	Graduates	2	—

- Library facilities. : Computerised database serachs, reprographic facilities, Inter library loan, reference services, referral services, query-response service, information products, automated holdings.

Major achievements claimed :

- The major achievements involve
 - i) Tara Vibrator : To make low cost microlite tiles & sheets at locations where there is no electricity. Frequency achieved is between 2500-3000 cycles/minute.
 - ii) Tara Baïram : Soil block press to make standard size blocks for low cost construction purposes. Also used to make bricks. The original design has been modified for increased efficiency and lesser fatigue to operators.
 - iii) Tara Loom : An improved semi automatic handloom, whose continuous take-up motion has been perfected. 120 looms have been satisfactorily designed, manufactured and field tested.

- iv) Ferro cement channels and beams : Pre-fabricated structural elements with spans up to 4.5m have been designed to replace elements of steel and cement. Load testing for evaluation of performance is in process.
- v) Water testing kits : More than 200 water testing kits have been assembled and supplied to WWF and further dissemination. Improvement for a more versatile kit is in progress.
- vi) Industrial wastes : By using binary and tertiary mixtures of industrial wastes with small fractions of gypsum, lime and sodium silicate, compressed blocks have been developed, which has excellent properties of strength, water absorption and potential use in building construction. Rigorous testing is under progress.

● Research papers/Reports published : 10

● Seminars/Conference attended organised : 5

Name and Designation of five Senior Researchers

- Dr. Ashok Khosla, President
- Dr. Arun Kumar, Head of Technology Systems Branch
- Mr. George C. Varughese, Head of Environment Systems Branch
- AVM S., Sahni—Manager, Regional Office, Thana
- Mr. K. Chatterje, Chief, Global Environment Group

SOCIETY OF PESTICIDE SCIENCE, INDIA

Address

Division of Agricultural Chemicals,
Indian Agricultural Research
Institute, New Delhi-110 012.

Background

- Status of the SIRO : Registered Society under the Societies Registration Act, 1860
- Year of establishment : 1987
- Major objectives : To conduct research on the use of potassium and related plant food nutrients in agriculture.

Date of initial recognition by DSIR : 1991

Income and R & D expenditure

	(Rs. in lakhs)	
<i>Income</i>	1992-93	1993-94
Donations received	0.95	Nil
Grants received	0.20	0.15

Infrastructural facilities

R&D Manpower

: Honorary office bearers

Qualification

Full time

Scientific & Technical

Doctorates/
Post Graduates

The members of
the Society are
working as
Honorary staff

Library facilities

: Library of IARI, New Delhi.

Major achievements claimed :

The Society of Pesticide Science, India is a purely academic society formed to promote and disseminate scientific research and knowledge generated by its members from scientific community. This is done through regular and timely publication of its official journal—Pesticide Research Journal and other special publications being brought out from time to time. The Society has published 4 books, conducted National Symposium and lectures of renowned national and international scientists. It published 6 volumes of Pesticide Research Journal. Besides, the Society organises subject matter discussions/seminars/workshops, publication of the Proceedings and other Publication of the Society on the issues related to Pesticide Science Environment and Human Welfare.

- Research papers/ Reports published : The Society publishes Pesticide Research Journal annually.
6 volumes have been published
- Seminars/Conferences attended/organised : The Society organised a National Symposium on Pesticides: Future Scenario 15—17 April, 1993.

SOCIETY FOR RESEARCHES IN FUNDAMENTAL APPLIED SCIENCES: SR RESEARCH LABORATORY FOR STUDIES IN CRYSTALLISATION PHENOMENA

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Society 96, Mamillaguda,
mam-507 001,
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Background

Status of the SIRO

: Institution affiliated to society.

Major objectives

: To carry out Researches on Specific problems in solid State Chemistry, Solid State Physics, Surface Sciences that are compatible with Industrial requirements and needs (and also have significance from pure Science point of view) in the areas of natural products, fats, oils and Petroeum relates Subjects.

Major research areas

: Research areas related to the above stated major objectives.

Initial designation by DSIR

: April, 1994; (No. 11/298/93-TU-V)

Income and R & D expenditure:

	1992-93	1993-94	(Rs. in lakhs) 1994-95
<i>Income</i>			
Donations Received	Nil	Nil	Nil
Grants Received	0.45	0.30	1.0
Other Income	Personal contributions from the Hon. Director to meet the day-to-day expenditure etc.		

Expenditure on R&D

● Capital	1.25
● Recurring	0.5

Infrastructural facilities:

Land & Building : The research laboratory is established and being run in the palatial house of the Hon. Director.

List of sophisticated equipment:

- Inverted optical polarization microscope with large working distance objectives and miore fringe attachment.
- Equipment for light scattering studies.

R & D Manpower:

	Qualifications	FullTime
Scientific & Technical	Doctorates	3
	Post Graduates	5
	Graduates	1
Social Sciences		2

Library facilities : Available in the specific subjects only.

Major achievements claimed:

- Research papers/
Published : 9
- Seminars/Conferences
attended : 2

- Awards won : A.P. State Government's Award was given to Dr. P.B.V. Prasad for the year 1993-94.
- Any other : Efforts are being made to procure international assistance to the equipment and library-wise development of the institute.

Name of Senior Researchers:

- Dr. P.B.V. Prasad, (Hon. Director)
- Dr. G. P. Reddy
- Dr. A. R. C. Reddy

SOLAR ENERGY SOCIETY OF INDIA

ard was
for the
procure
to the
develop

Address
Darbari Seth Block,
Habitat Place, Lodi Road,
New Delhi-110 033.

Background

: A society of members working in the field of solar and renewable energy. It is the Indian section of International Solar Energy Society.

Year of establishment

: 1978

Major objectives

: To advance, promote and propagate the use of solar and other renewable energy sources by:

(i) Encouraging basic and applied research

(ii) Collection, compilation and dissemination of information regarding solar energy

(iii) Collaboration and cooperation with scientific societies, institutions and academics in the country and abroad

(iv) Organizing seminars and conferences

(v) Publishing books, memoirs, journals and proceedings

Initial recognition by DSIR : 1995

Income and R & D expenditure:

		(Rs. in lakhs)	
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations received	Nil	Nil	Nil
Grants received	Nil	Nil	Nil
Other income	0.05	5.05*	—
<i>Expenditure on R & D</i>			

● Recurring	1992-93	1993-94	1994-95
SESI journal	—	—	0.33
Dr. K.S. Rao award	—	0.50	0.50
Annual convention	0.10	0.10	0.10
Assistance to regional chapters	—	0.13	0.20

*Rs. 5 lacs is corpus for award on Photovoltaic. The interest accrued on Rs. 5 lacs will be used for award.

Infrastructural facilities:

Land & Building Area : 100 sq ft. (operating from office space provided by Tata Energy Research Institute, Darbari Seth Block, Habitat Place, Lodi Road, New Delhi-110003.

Equipment facilities : Gross Value : Rs. 2.64 lakhs.

R & D Manpower : Yet to be acquired

Major achievements claimed:

- Research papers/reports published : The Society publishes SESI Journal and SESI Newsletter
- Seminars/conferences attended/organized : Organizes the National Solar Energy Convention. In addition, regional seminars etc. are organised by regional chapters of the society.
- Any other : (i) Presents K.S. Rao Memorial award to eminent scientist working the field of renewable energy technologies.
(ii) Presents PVSEC awards to eminent workers in the field of solar photovoltaics
(iii) Organizes International Sunday every year
(iv) Organises S. Deb memorial lecture series

Name and Designation of five Senior Researchers:

- Dr. V.V.N. Kishore, Secretary-Treasurer
- Prof. N.K. Bansal, Governing Council Member
- Prof. H.P. Garg, Governing Council Member
- Prof. A.K. Barua, Governing Council Member
- Dr. A.N. Mathur, Governing Council Member

Address
No. 110, I
Quindy,
Madras-6

DSIR/

SPIC SCIENCE FOUNDATION

Address
No. 110, Mount Road,
Guindy,
Madras-600 032.

Background

: SPIC Science Foundation is registered under Tamil Nadu Societies Act. It started functioning from the year 1985. The major research areas are, Agrochemicals, Biotechnology, Energy and Mathematics. DSIR recognition is from October, 1988 and has been subsequently renewed. The objectives of SPIC Science Foundation are to promote research in the areas of interest and address problems of relevance in these areas.

Income and R & D expenditure

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donations received	NIL	NIL	NIL
Grants received	225.89	200.25	274.24
Other income	1.99	7.40	3.43
<i>Expenditure on R & D Capital</i>	5.38	2.21	3.01
• Capital	38.38	51.40	18.98
• Recurring	158.09	169.71	150.96

Infrastructural facilities

Land & Building : Area: 12000 Sqft. of rental building at Mount view building, 111, Mount Road, Guindy, Madras and 2200 Sqft. of rental building at No. 92, G.N. Ghetty road. T. Nagar, Madras.

Equipment facilities : Gross value: Rs. 378.42 lakhs

List of sophisticated equipment:

: FTNMR; Gene Assembler; HPLC; Electrochemical Impedance Measurement System.

R & D Manpower:

	Qualification	Full time
Scientific & Technical	Doctorates	30
Social Sciences and Others	Post Graduates	11

Library facilities:

A well furnished Library exists in the 'Mount view' building.

Major achievements claimed:

- Technologies developed and transferred for upscaling/ commercialisation:
- i) Pilot plant scale production for 'Mancozeb' is being organised at CLRI. A new neem based 'Wattable Powder' formulation standardized in terms of 'Azadirachtin' content is being tested for stability and bio efficacy.

- ii) A 5 KW Solid Polymer Electrolyte Fuel Cell using by-product hydrogen available from chlor alkali industry was demonstrated to the funding agencies, i.e. ICICI, SPIC by the CEER division of SPIC Science Foundation.
- Technologies developed and ready for upscaling:
A number of pheromones, which have excellent pest control potential in sugar-cane crops have been synthesised and these have excellent export potential.
 - New Techniques/methodologies developed and implemented:
A need based formulation for plant protease has been developed and demonstrated for commercialisation. Similarly, a Biofertilizer formulation has been developed and demonstrated for commercialisation.
 - Research papers/Reports published:
A total of 40 journal articles, conference papers, preprints and reports has been published by SPIC Science Foundation.
 - Seminars/Conferences attended/organised:
A total of 51 conferences, visits and external lectures were organised by SPIC Science Foundation.
 - Awards won: Shantiswarup Bhatnagar Award - 1972
 - Srinivasa Ramanujam medal of INSA - 1985
has been won by Prof. C.S. Seshadri, Dean,
School of Mathemartics.

Name and Designation of Senior Researchers:

- Dr. T.R. Govindachari, Advisor, CAR;
- Dr. N.S. Narasimha, Director, CAR;
- Dr. Joseph Thomas, Director, CBR;
- Dr. S. Parthasarathy, Director, CEER.

SRI AUROBINDO INSTITUTE OF APPLIED SCIENTIFIC RESEARCH TRUST

Address
Bhadrak House
Maravadi Street,
Chennai Nagar,
Chennai-605 012

Background

- Status of the SIRO : Institution
- Year of establishment : 1986
- Major objectives : Basic & applied research in fields of alternative energy pharmaceutical sciences, geobiology and architecture.
- Major research area : Wind turbines
Solar refrigerator
Solar cookers
Appropriate Technology
Geobiology
Architecture

Income and R & D expenditure

		(Rs. in lakhs)	
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations received	4	4.6	4.7
Grants received	2	nil	nil
<i>Expenditure on R&D</i>			
● Recurring	6	4.6	4.6

Infrastructural facilities

Land & Building : Floor Area 700 Sqm.

Equipment facilities : Gross value : Rs. 2 lakhs

R & D Manpower

	Qualification	Full time	Part time
-Scientific & Technical	Doctorates	2	—
	Others	4	1
Assistants		4	—
Administrative		2	—

Library facilities : Standard Works & reference books are available.

Major achievements claimed

- New Techniques/methodologies developed and implemented :
 - Trailers for cycle/moped
 - manual load carrying Four-Wheeler vehicles
 - Design of buildings based on the principles of Geobiology
- Awards won : Sri Prabhat Poddar elected as a member of the New York Academy of Sciences, N.Y., USA.
- Any other : Consultations on Geobiology - 20

Name and Designation of Senior Researchers

- Dr. N.K. Maitra, Coordinator
- Dr. R.L.N. Sastry, Scientist
- Sri Pramod Dalal, Scientist
- Sri Kishore Panda, Scientist
- Sri Prabhat Poddar, Scientist
- Sri Michael Neville, Scientist.

DR. B.V. PATEL PHARMACEUTICAL EDUCATIONAL & RESEARCH DEVELOPMENT (PERD) CENTRE

Address
B.V. Patel PERD Centre, Gandhinagar Highway,
Ahmedabad-380 054.

Background

Status of the SIRO : B.V. Patel PERD Centre is a research institute, as well as a grant-in-aid institute by the state Government of Gujarat. Its Ph. D. programme is recognised for Pharmaceutical Sciences and Technology, by the All India Council for Technical Education (AICTE), Government of India, as well as M.S. university, Baroda and Kakatiya University, Warangal.

Year of establishment : 1989

Major objectives

- (a) To undertake industry sponsored basic and applied research projects;
- (b) To undertake government sponsored basic and applied research projects;
- (c) To offer doctoral and postdoctoral research programmes in the pharmaceutical sciences;
- (d) To develop in-house patentable/commercialisable pharmaceutical services and technology; and
- (e) To conduct continuing education and specialised training courses.

Major areas of research

(a) *Pharmacy & Pharmaceutical Technology*

- (i) Pharmaceutical preformulation studies and design and development of conventional and novel drug delivery systems;
- (ii) Bioavailability and bioequivalence testing and evaluation;
- (iii) Pharmacokinetics - mechanisms and processes;
- (iv) Preclinical, toxicological and clinical pharmacokinetic and pharmacological evaluation of new drugs, new formulations and new chemical entities;
- (v) Radiation sterilisation services for pharmaceutical products and drugs;
- (vi) Radioisotope applications in pharmacy.

(b) *Biological Sciences*

- (i) Pharmacological and biochemical screening of new drugs, herbals and new chemical entities, in *in vivo* and *in vitro* test models;
- (ii) Development of biotechnology based drugs and pharmaceuticals such as monoclonal antibodies and immunodiagnostic kits;
- (iii) Extraction and identification of drugs and pharmaceuticals of biological and plant origin;

- (iv) Synthesis of active biochemical substances and drugs using tissue culture techniques.

(c) *Chemistry*

- (i) Synthesis of bulk drugs - development of process technology for both drugs and intermediates;
- (ii) Design and synthesis of new chemical entities;
- (iii) Analytical method development for applications in the pharmaceutical industry - bulk drug synthesis, formulations and raw materials, quality control, and preclinical and clinical testing.

Initial recognition by DSIR : August, 1990.

Income and R & D expenditure

<i>Income</i>	1992-93	(Rs. in lakhs)	
		1993-94	1994-95
Donations received	66.45	15.05	9.73
Grants received	20.00	34.12	25.00
Other income	5.36	12.32	12.31
<i>Expenditure on R & D</i>			
• Capital	63.82	31.13	21.20
• Recurring	26.75	35.21	39.28

Infrastructural facilities

Land & Building : Total land area : 10,000 sq. mt. (value Rs. 30 lakhs)
Built up area : 3,277.76 sq.mt. (value Rs. 100 lakhs).

Equipment facilities : Gross value : App. Rs. 277.07 lakhs

- List of sophisticated equipment:
- (a) *Analytical* : High Pressure Liquid Chromatographs (HPLC); Gas Chromatograph (GC); HPTLC; IR; UV visible spectrophotometer; Flame photometer; Gel electrophoresis, Glucose oxidiser; Coulter counter; Gamma counter; Beta counter.
- (b) *Pharmaceutical* : Kalweka multiple attachment unit; Mini roll compactor; Dissolution testing apparatus; Thermal analysis system; Fluid bed dryer, coater & granulator; 16 station tableting machine.
- (c) *Data handling* : PC 486 and 286 computers.

R & D Manpower

Scientific & Technical	Qualification	Full time	Part time
	Doctorates	9	1
	Post Graduates	7	
	Others	3	1

Administrative and
non technical staff

17

Library facilities : The library occupies an area of 269 sq. mt., and consists of more than 1,000 books and 3,000 bound journals.

Major achievements claimed

- In-house technology development : Conventional and long acting/controlled release formulations for ciprofloxacin, ketorolac tromethamine, diclofenac sodium, carbamazepine, isosorbide - 5 mononitrate, theophylline, ibuprofen, diltiazem, and verapamil.
- Research papers/Reports published : 20
- Seminars/Conferences attended : The annual Indian Pharmaceutical Congress
 - 20th International Seminar on "Controlled Release of Bioactive materials", Washington D.C. - July, 1993
 - Eastern Regional Meeting of the AAPS, new Jersey - July, 1994
 - Bio International 94, Munich - July 1994
 - International seminar on "Recent Trends in Pharmaceutical Sciences", Ooty - February, 1995
 - Workshop on "Plant Tissue Culture", Ahmedabad - March, 1995
 - 22nd International Seminar on "Controlled Release of Bioactive materials", Seattle - July, 1995



Photograph of a Shimadzu HPLC unit, Model LC 10A with LC-Workstation

- Seminars/Conferences organised : ● 2nd International Symposium on "Innovations in Pharmaceutical Sciences & Technology" February, 1994
- The institute has conducted approx. 17 workshops and seminars, since 1992, under the auspices of the Continuing Education Division of the B.N. Patel Education Trust, Ahmedabad.
- Awards won : (i) Director of the Centre, was awarded the Professor G.P. Shrivastava Memorial Award, in 1992.
- (ii) Research Scientist, was awarded "Best Poster Presentation" at the international seminar on "Recent Trends in Pharmaceutical Sciences", at Ooty, in February, 1995.

Name and Designation of five Senior Researchers

- | | |
|-----------------------|---|
| ● Prof. H.L. Bhalla | Director |
| ● Dr. Anisha Pargal | Jt. Director - Division of Pharmacy & Pharmaceutics |
| ● Dr. H. Padh | Assistant Director - Biology |
| ● Dr. V.P. Shedbalkar | Research Scientist - Analytical Chemistry |
| ● Dr. S.C. Thacker | Research Scientist-Biology |



Pilot Plant for Pharmaceutical Formulation Development

SHRI VILE PARLE KELAVANI MANDAL'S C.B. PATEL RESEARCH CENTRE FOR CHEMISTRY AND BIOLOGICAL SCIENCES

Address:
Bai College Building,
Floor, Vile Parle (West)
Pay-400 056

Background

Status of the SIRO

: An Institution managed by Shri Vile Parle Kelavani Mandal, Vile Parle, Bombay which is registered as a Public Trust.

Year of establishment

: December, 1990.

Major objectives

- : (i) To conduct research relevant to the needs of the society;
- (ii) To collaborate with industry mainly those engaged in the production of chemicals and pharmaceuticals, through Research projects aimed at offering a solution to their problems;
- (iii) To collaborate with the agricultural sector through research aimed at improving plant productivity;
- (iv) To collaborate with educational institutions and research institutions with a view to facilitating support to their research programmes through expertise available at the Centre;
- (v) To mobilise opinion in favour of environmental protection and to make efforts to help solve problems of industry aimed at reducing pollution;
- (vi) To disseminate scientific information through holding of seminars/workshops/symposia;
- (vii) To undertake research of an interdisciplinary nature so as to generate holistic scientific information.

Major research areas

: Analytical Chemistry, Animal Physiology, Plant Physiology and Biochemistry, Plant cell and Tissue Culture, Microbiology.

Initial recognition by DSIR

: May, 1995

Income and R & D expenditure

	(Rs. in lakhs)	
	1993-94	1994-95
Income		
Donations Received	Nil	1.79

Grants Received		Nil	
Other income		1.44	Nil 0.30
<i>Expenditure on R&D</i>			
• Capital	3.07	0.09	
• Recurring	1.15	1.46	27.54 3.93

Infrastructural facilities

Land & Building : Present Area: 2300 sq. ft. The Research Centre will soon shift to its new premises (5300 sqft.)

Equipment facilities: Gross value: Rs. 43.25 lakhs.

List of sophisticated equipments :

High Performance Liquid Chromatograph with fluorescence Model FP 920, electrochemical-875-EC & UV-visible detector-875-UV & HPLC autosampler.

Supercritical Fluid Extractor and Supercritical Fluid Chromatograph

Gas Chromatograph with ECD & NPD.

Spectrofluorimeter

Infra Red Spectrophotometer with hydraulic press & Report Printer

UV-visible Spectrophotometer

Flame Photometer.



HPLC with Fluorescence Model-FP-926

R & D Manpower**Qualification****Scientific & Technical: Doctorates** 5

Post Graduate 2

Library facilities: Centre is gradually building up its own library and is subscribing to Scientific journals. It has an arrangement with the Mithibai College for making use of the latter's library facilities.

Major achievements claimed**Research papers/Reports Published :** 2**Seminars/Conferences attended/Organised :**

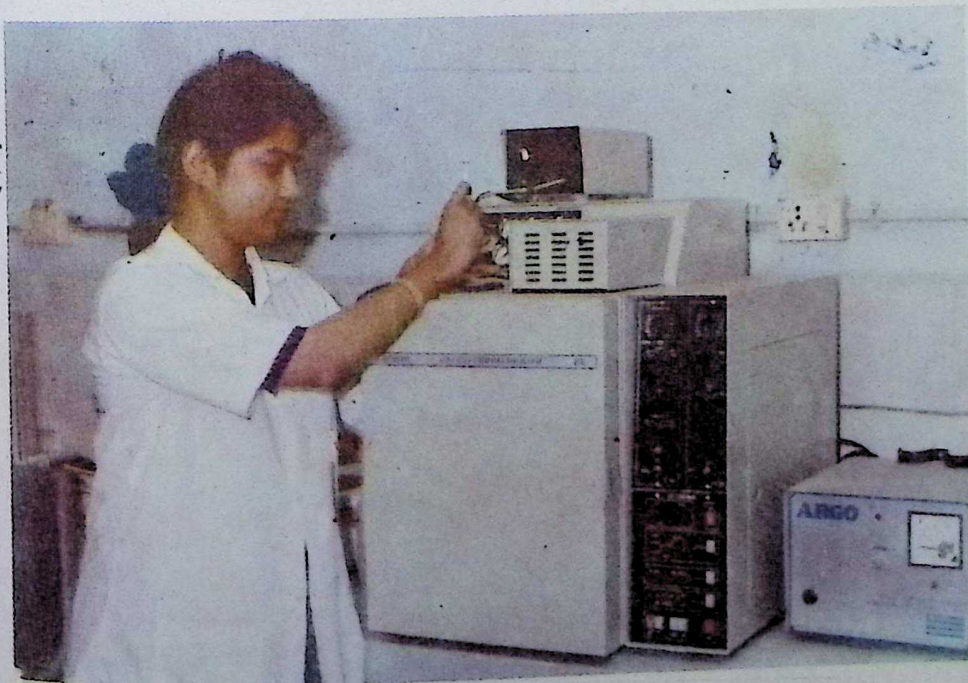
Seminar and workshop on 'SPECTROPHOTOMETRY FOR COLLEGE TEACHERS' on the 14th Nov. 1992.

Seminar and Workshop on 'INSTRUMENTAL METHODS IN QUALITY CONTROL OF FINE CHEMICALS AND PHARMACEUTICALS' on the 12th and 13th Apr. 1993.

"Seminar on 'NEED FOR COMPLEMENTARY FUNCTIONING OF RESEARCH INSTITUTES, AND INDUSTRY' on the 9th Oct. 1993.

Name and Designation of Senior Researchers

- | | |
|-------------------------|--|
| ● Dr. S.M. Karmakar, | Director (Research) & Scientist Emeritus |
| ● Dr. M. Sundaresan, | Scientist Emeritus |
| ● Dr. P.T. Muthe | Scientist Emeritus |
| ● Dr. (Mrs.) R.M. Bhatt | Scientist Emeritus |



Gas Chromatograph with ECD & NPD Model No. 8516.

SRI SAI INSTITUTE OF HIGHER LEARNING

Address:

Sri Sathya Sai Institute of
Higher Learning
(Deemed University)
Prasanthinilayam-515 134, (A.P.)

Background

Status of the SIRO : University
Year of establishment : 1981
Major objectives : The Institute aims at imparting Inter
Education in its programmes of High
Studies. What infuses new life into
teaching and learning community
the Institute and marks its uniqueness
is the pursuit of academic excellence,
knowledge and wisdom combined with
duty and devotion; illumination through
purity and meditation; health through
Yoga and Games and Social service
through fieldwork and project work
and a sense of unity of being a
World-brotherhood. Under the Divine
direction and Guidance of
Chancellor, the Institute is providing
educational programmes, with
inspiration which ensures a deep
appreciation of knowledge and wisdom
accumulated through the centuries and
a genuine experience of the ideals
Sathya, Dharma, Shanthi, Prema and
Ahimsa in the contemporary milieu

Initial recognition by DSIR : February, 1990

Income and R & D expenditure

	(Rs. in lakhs)		
Income	1992-93	1993-94	1994-95
Donations Received	—	0.07	—
Grants Received	—	70.75	52.1
Other income	—	0.11	4.1
Expenditure on R&D			
● Capital	—	6.52	75.1
● Recurring	0.33	0.69	0.3

Infrastructural facilities

Land & Building : Academic area 45 Acres; Play ground 30 Acres; Hostel
15 Acres; Staff quarters 8 Acres.

Department/Administrative Buildings:—

Institutional Area	: 24,000 Sq.ft.
Administrative Buildings	: 15,000 Sq.ft.
Amenities Area	: 5,000 Sq.ft.
Residential Area	: 1,00,000 Sq.ft.

Equipment facilities: Gross Value; Rs.90.00 Lakhs

List of sophisticated equipments

The laboratories of various departments of the University are well equipped with sophisticated equipments such as G.C, HPLC, X-ray diffraction apparatus, spectrum analyser, Acous to optic modulators, UV/VIS spectrophotometre, organic elemental analyser and a host of other facilities.

R & D Manpower

	Qualification	Full time
Scientific & Technical	Doctorate	9
Social Sciences & Others		

Library facilities : Books—41,000,; Journals—300

- a. Reading hall
- b. Stack room (Seating 130) 870 Sq. Mts Area.
- c. Current Periodicals room
- d. Issue counters (Seating 20) 630 Sq. Mts Area.
- e. Office & Stores

Major achievements claimed

● Technologies Developed and Transferred for rpscaling commercialisation

Dept. of Physics : (i) Nuclear spectroscopy and applied Nuclear Physics: Basic nuclear structure studies and Nuclear techniques applied in environmental studies.

(ii) Nonlinear Optical Effects in Fibres: Their role in Fibre Optic Communication.

Dept. of Biosciences : (i) Haemochemistry and Haematology of blue blooded snail, *Pila globosa* with special reference to aestivation stress.

(ii) Water Quality and water Management in Relation to Public Health and Environmental Pollution.

(iii) Studies on Ecophysiology and Biotechnology of Vam Fungi of Semi-Arid Topical soils of Anantapur District, A.P.

Dept. of Chemistry : Theoretical and experimental approaches to the Development of Effective Anti-Cancer Drugs.

Dept. of Mathematics : Establishment of Artificial Intelligence Centre for Research and Training

● Technologies developed and ready for upscaling:

- (i) Dept. of Physics: Nonlinear Optical Effects in Fibres: Their role in Fibre Optic Communication.
- (ii) Dept. of Biosciences: Water Quality and water Management in Relation to Public Health and Environmental Pollution.
- (iii) Dept. of Chemistry: Theoretical and experimental approaches to the Development of Effective Anti-Cancer Drugs.
- (iv) Dept. of Mathematics: Establishment of Artificial Intelligence Centre for Research and Training.

● New Techniques/methodologies developed and implemented:

- (i) Department of Chemistry: A new potential antimalarial product Neeflone has been isolated from neem flowers and its structure is determined. Optimum conditions for the process development are in progress.

A long chain trihydroxy linear product isolated from *Persea gratissima* was found to have modest surfactant activity. The procedure has been standardised for the isolation and structural transformation reactions are in progress to improve its activity.

- (ii) Department of Physics: Designed and fabricated a mini-Orgnagne electron transport system for basic research in nuclear spectroscopy. Developed computer programme for simulation of the above system for optimisation purpose.
- (iii) Department of Biosciences: Deflouridation technique with activated alumina has been developed and implemented for domestic and community use.

● Research papers/Reports Published:

- (i) Department of Physics : 8
- (ii) Department of Biosciences : 7
- (iii) Department of Chemistry : 7
- (iv) Department of mathemtics and :
Computer Science : 20



Sri Sathya Sai Space Theatre

Name and Designation of Senior Researchers:

- Prof. K. Srinivasan, Prof. & Head, Dept of Physics
- Prof. P. Satyanarayana, Prof. & Head, Dept. of Chemistry
- Prof. P.V. Bhairavamurthy, Prof & Head, Dept. of Biosciences
- Prof. K.B. Naidu, Prof & Head, Dept. of Mathematics and Computer Sciences; and
- Dr. G.V. Prabhakara Rao, Reader, Dept. of Mathematics and Computer Sciences.



Becman Ultra-Centrifuge

SUGARCANE RESEARCH INSTITUTE

Address:

At & P.O.: Pusa Distt.,
Samastipur-848125
Bihar.

Background:

Sugarcane Research Institute was established in 1932. At present under the technical & financial control of Rajendra Agril. University, E

The major objective of the research work is to develop sugarcane varieties of early and mid-late maturity groups for sugar factories of Bihar adjoining states. The varieties developed by this Institute are mostly tolerant to flood, drought and saline conditions. They are also tolerant to many diseases and pests. Sugarcane varieties are also developed for making. Thousands of small and marginal sugarcane growers are benefited and employment opportunity generated by Gur Industry. Agronomical plant protection technologies are also developed in order to increase yield and quality components of sugarcane varieties. There are several departments in this Institute, viz. Breeding, Agronomy, Soil Science, Sugarcane Chemistry, Plant Pathology, Entomology, Nematology, Economics and extension.

Initial recognition by DSIR : 1990

Income and R & D expenditure:

Income	1992-93	(Rs. in lakhs)	
		1993-94	1994-95
Donations received	Nil	Nil	
Grants received	136.45	112.71	149.5
Other income	2.09	0.78	5.0
Expenditure on R & D			
• Capital:	Nil	Nil	1.0
• Recurring:	134.52	115.10	152.5

Infrastructural facilities:

Land & Building Area : Area: 22 ha, Value: 350 lakh.

Equipment facilities : Gross Value : Rs. 82 lakhs.

List of sophisticated equipment :

Laminar flow
BOD Incubator
Humidity cum temperature cabinet
Research Binocular Microscopes with phase contrast & dark field microscopy
Lypholizer
Flame photometer
Spectronic—20
Zoom stereoscopy microscope.

R & D Manpower :

	Qualification	Full Time
Scientific & Technical	Doctorate	15
	Post-Graduates	4

Library facilities : Available in Rajendra Agril. University Library.

Major achievements claimed:

- Technologies developed and transferred for upscaling/commercialisation:

Two mid-late sugarcane varieties, BO 128 and COP 9206 were released for commercial cultivation in state of Bihar. BO 128 is tolerant to water-logging, rain fed and saline conditions where-as COP 9206 is high sugared variety with average yield of 78 t/ha. Planting of sugarcane during autumn alongwith potato as intercrop enhanced the net profit per unit area.

- Technologies developed and ready for upscaling:

(i) The sugarcane variety of early maturing group B.O. 120 has out-yielded others in final evaluation trial at different coordinating centres of North-Central zone. Other varieties of different maturity groups, like B.O. 128, CoP 9103, CoP 9106, B.O. 122, B.O. 123 etc. are at various stages of testing under All India coordinated Research Project on sugarcane for North-Central zone.

(ii) Soil application of Carbofuran @ 1.0 Kg. a.i./ha and pressmud @ 20.0 t/ha minimises the nematode population.

(iii) Soil application of Gamma HCH or phorate against shoot and root borer are effective in reducing the pest incidence.

(iv) Saline sodic soils can be reclaimed by application of 4.0 t/ha of pyrite or 20.0 t/ha of sulphitation pressmud or mixture of both in the ratio of 50 per cent. Paired row planting of sugarcane with 150 per cent seed rate recorded higher yield and net profit/ha than normal method of planting.

- New techniques/methodologies developed and implemented:

(i) Sugarcane crop planted in Autumn season recorded 25 per cent more yield than spring planting.

(ii) Gamma HCH @ 1.0 kg a.i./ha has been found to economise 'N' fertilizers to the tune of 25—30 per cent.

(iii) Application of 60 kg per ha. of K₂O gave more yield in comparison to 30 kg/ha.

(iv) Extracts from the green stem of Debla, wild Bhindi, Fuśla were good clarificant of cane juice during Gur making.

- Research papers/Reports : 18 published

- Seminars/Conference attended/organised : The scientists are regularly attending the annual workshops and seminars organised by various organisations at state and national level.

- Award won : Prizes were bagged by this Institute during Kisan Melas at block, districts and state levels.

Name and Designation of five Senior Researchers:

- Dr. K. D. N. Singh, Senior Scientist (Sugarcane Chemistry)
- Dr. J. R. P. Singh, Senior Scientist (Breeding)
- Dr. U.S.P. Sinha, Senior Scientist (Agronomy)
- Dr. S. Kumar, Senior Scientist (Pathology)
- Dr. U. K. Mishra, Senior Scientist (Entomology)

SUNRISE EMERGING TECHNOLOGIES (R&D)

Address

Site No. 17, Phase-1,
Peenya Industrial Area,
Bangalore-560 058.

Income and R & D expenditure:

Income	1992-93	(Rs. in lakhs)	
		1993-94	1994-95
Donations received	Nil	Nil	
Grants received	2.5	2	
Other income	Nil	Nil	
Expenditure on R & D			
● Capital*:	Nil	Nil	
● Recurring**:	3	3	

Infrastructural facilities:

Land	: Area: 1,200 sq. ft. made available by H.H.V. Group
Building	
Equipment facilities	: Gross value : Rs. 15 lakhs

List of sophisticated equipment

The laboratories are well equipped with sophisticated facilities like Lathe with milling attachment, Portable Grinder, optional pyrometers, UHV components, Gas manifold/cylinders, Ball Mills, Tubular furnaces, etc.

R & D Manpower :

	Qualification	Full Time
Scientific & Technical	Graduates/	4
	Diploma Holders	2
Social Sciences and others	Doctorates/	1
	Post Graduates	1

Major achievements claimed :

- Technologies developed and ready for upsalling : Electronic materials Evaporable & nonevaporable getters
- New Techniques/methodologies : developed : Design of a novel crystal puller for silicon

Name of five Senior Researchers

- Prof. G. Suryan
- Prof. A.R. Vasudevamurthy
- Prof. K.V. Ramanathan
- Dr. K.S. Narayan
- Dr. S. Krishnan

TATA ENERGY RESEARCH INSTITUTE

Background

: Tata Energy Research Institute (TERI) was set up in 1974 at the initiation of some Tata companies spearheaded by Tata Chemicals. Over the years TERI's stature and credibility has grown nationally and internationally, it continues to attract projects and support from a wide range of organizations, as it does talent to the ranks of its staff from the best institutions spread over the globe.

Major objectives

: TERI was set up essentially to tackle the immense and acute problems that mankind is likely to face in the years ahead on account of (i) the gradual depletion of the earth's finite energy resources which are largely non-renewable; and (ii) the existing methods of their use, which lead to increasing pollution.

Major research areas

: TERI's wide ranging, integrated and multi-disciplinary approach encompasses activities which can be broadly classified into eleven thrust areas: Energy - Environment Interface, Global Warming and Climate Change, Modelling and Policy Analysis, Energy Data Systems, Conventional Energy Sources, Chemical and Hydrogen Energy, Industrial Energy, Renewable Energy Technology, Rural Energy, Forestry and Biodiversity, and Biosciences.

Income and R & D expenditure

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations received	225	135	100.10
Grants received	NIL	NIL	NIL
Other income	548.39	698.64	213.30
<i>Expenditure on R & D</i>			
● Capital	81.37	96.12	146.60
● Recurring (Admn. etc.)	487.68	553.47	491.88

Infrastructural facilities

Land & Building:	Gaul Pahari	IHC
	Area: 89.1 acres	5740 sq.m
	Value : 205.38 lakhs	1179.79

Equipment facilities: Gross Value : 723.65 lakhs

List of sophisticated equipments

- Beckman Liquid Scintillation Counter;
- Virtis Lyophiliser
- Waters High Performance Liquid Chromatograph
- NIR System - Near Infrared Monochromator
- Perkin Elmer Cetus Temperature Cycler
- UVP Transilluminator with Polaroid Camera
- Olympus Inverted & Phase Contrast Microscopes
- Shimadzu Somatic Cell Hybridiser

R & D Manpower

	Qualification	Full Time	Part Time
Scientific	Doctorate	44	-
& Technical	Post Graduate	165	04
	Graduate	57	-

Library facilities:

- (i) Approximately 11,500 technical books, reports, and proceedings of scientific conferences in the field of energy (particularly the renewable aspects), plant biotechnology, environment, and forestry; about 550 current journals and 4146 back volumes of journals; and Government documents and annual reports of ministries, companies, and research organizations. The library follow the Universal Decimal Classification scheme for organizing its collection and has an open-access system for its users.
- (ii) In addition to the conventional services and activities, the availability of two information software packages, Micro CDS/ISIS Sci-Mate has made information management through computer applications possible. Successful exploitation of these packages has resulted in the creation of several bibliographic databases, which would eventually have far-reaching benefits in terms of networking, resource sharing, and universal availability of information. The packages are also used for monitoring library routines such as serials control, circulation, and preparation of mailing lists.
- (iii) The e-mail facility, installed in the Library under the DELNET (the Delhi Library Network) programme sponsored by NISSAT (Nationals Information System for Science and Technology), connects TERI to important libraries in Delhi.

- (iv) TERINET: The institute's computer centre is engaged in establishing a local area network called TERINET. With the implementation of TERINET, access to the library's diverse services would be further enhanced.

Major achievements claimed:

- Technologies Developed & Transferred for Up scaling/ Commercialization:

EET

- (i) Biomass gasifier (upto 250,000 kcal/hr capacity) for
 - (i) large scale cooking
 - (ii) CO₂-making
- (iv) Gasifier based power generation upto 50 KW

Bio-Sciences

- (i) Hybrid system in Brassica napus
- (ii) Species-specific probes for Brassica
- (iii) Interspecific and intergeneric hybrids in Brassica

Forestry

- (i) Technologies for clonal planting of Eucalyptus was developed and transferred to ITC-Bhadrachalam Paper Boards Ltd., Andhra Pradesh.

- Technologies developed and ready for upscaling:

EET

- (i) Biogas plant (2-10 m³ gas production/day)
- (ii) Biomass gasifier for following thermal application
 - Silk-reeling Ovens
 - Drying
 - Boilers
- (iii) Efficient drying system for cardamom, coffee, pepper.
- (iv) Shallow solar pond for water heating.
- (v) Salt gradient solar-pond for process heat and desalination (A full scale system has already been demonstrated)
- (vi) Solar passive system using solar chimney for thermal conditioning of buildings.
- (vii) UASB reactor for biomethanation of organic effluents
- (viii) Box type solar rice cooker
- (ix) Production of solid smokeless fuel from agricultural waste

Bio Sciences

- (i) Yellow-seeded low erucic acid lines in B. Juncea
- (ii) Early maturing Zero erucic acid lines in B. napus
- (iii) DNA fingerprinting of plant species.
- (iv) Transformation of Brassica sp.

- New technologies/methodologies developed and implemented

Bio Sciences

- (i) Improvement of CMS lines through somatic hybridization.

- (ii) Hybrid embryo rescue technique.
 - (iii) Glucosinolate analysis by High Performance Liquid Chromatography.
 - (iv) Fatty acid analysis by Gas Chromatography
- Forestry

New methodology developed and implemented for afforesting water logged areas.

- Patients Field: 4
 - (i) Biomass fuel processing
- Seminars/Conferences attended/organised:

TERI conducts a number of training programmes and workshops on a regular basis round the year. The major ones being

- (i) Training Programme on Planning for the Power Sector
- (ii) Workshop on Energy Policy Issues: Problems of Supply & Consumption of Energy in the Rural Sector
- (iii) One week refresher course for IAS Officers on Energy & Environment
- (iv) Training Programme on Energy Planning for South Asian Countries

Name and Designation of five Senior Researchers:

- Ms Leena Srivastava, - Dean—Policy Analysis
- Mr Somnath Bhattacharjee, - Dean—Energy Engineering and Technology
- Mr. O. N. Kaul, - Dean—Forestry and Biodiversity
- Dr Sunil Khanna, - Dean—Biosciences
- Mr P. Venkata Ramana, - Dean—Rural Energy Research and Extension



Prototype unit of Gasifier based Silk Reeling Oven

TAMIL NADU AGRICULTURAL UNIVERSITY

ess
Nadu Agricultural
ersity, Coimbatore-641 003.

Background

Agricultural research in Tamil Nadu was started as early as in 1909 from the time of establishing the Agricultural College & Research Institute in Combatore. The research carried out in this Institute and the research stations in different parts of the State has resulted in increased production and productivity of the crops and upgraded the status of the farmers of Tamil Nadu. Subsequently with the establishment of Tamil Nadu Agricultural University in 1971, the research activities have been intensified in the State by starting newer colleges, research stations and newer departments in the different campuses. This has lead to further advancement in the Agricultural research in the State. Further, with the implementation of Phase 1 of National Agricultural Research Programmes (NARP) in the year 1981 and Phase II in 1988 with the assistance of the World Bank through the ICAR the research activities have been focussed towards finding newer varieties and technologies for different regions, locations and specific problems. Such efforts resulted in evolution of region specific high yielding varieties and need based technologies. This endeavour has boosted the productivity and production of crops in the state which lead to self sufficiency in many agricultural commodities in the State.

Major achievements claimed

The varieties released technologies developed, Ongoing schemes and future thrust areas are:

Varieties released (1972—1994)

- i) Rice : Co 36, Bhavani, Co 37, Co 38, Co 39, Co 40, Co 41, Co 42, Co 43, Ponmani, Co 44, Co 45, MGR (CoRH1), ADT 36, ADT 37, ADT 38, ADT39, ADT 40, Improved white ponnani, IR 64, JJ 92 (ADT 41), ADT 42, ASD 16, ASD 17, ASD 18, TKM 10, PY 1, PY 2, PY 3, Py 4, Paiyur 1, TPS 1, TPS 2, TPS 3, PMK 1, PMK 2, MDU 2, MDU 3, MDU 4, ASD 19, TRY 1, MDU 1.

Among 42 varieties, around 20 are still commanding in an appreciable are in Tamil Nadu. For the first time Tamil Nadu Agricultural University has released a hybrid rice MGR (CoRH1) which is capable of yielding 6.3 t/ha and hope to boost up the production of rice in Tamil Nadu.

An analysis of varietal improvement in rice will clearly reveal that inbuilt resistance for various important pests and diseases are being made successfully in the latest released varieties coupled with high yield and grain quality.

ii) Millets

- a. Sorghum : K 8, K 10, Co 21, Co 25, Co 26, Paiyur 1, CoH 3, CoH 4, BSR 1, Paiyur 2, CoH 1, CoH 2, Co 27, 771.
- b. Pearl Millet : Co 7, X 5, X 6, Co 6, X 4.

Co 7, a composite released in 1986, is suitable for both rainfed and irrigated condition. This composite recorded 13% and 60% increase over Co 6 and Km 2 respectively under irrigated condition. The grain has high protein content and market acceptability. It is highly resistant to downy mildew.

c. Finger Millet : Co 11, Co 12, Co 13, Co 10 Paiyur 3, TRY 1.

Among the varieties released in ragi, the latest variety Co 13 is now under cultivation in the farmers field in large scale. It is a short duration variety with a duration of 95-100 days, suited to both kharif and summer. It has an yield potential of 3600 kg/ha under irrigated condition and 2300 kg/ha under rainfed condition.

iii) Pulses

Regdgram	: Co H1 Co 4, Co 5, BSR 1, Co 6, Vamban-1, Co3, Co2.
Blackgram	: Co 5, ADT 3, ADT 4, ADT 5, Vamban-1, Kvilpatti-1, Co 2, Co 3, Co 4, ADT 2, APK 1.
Green gram	: Co 2, Co 3, Co 4, Co 5, Vamban 1, Paiyur 1, ADT 3
Cowpea	: Paiyur-1, Paiyur 1, Co 2, Co 3, Co 4, Co 5.
Bengalgram	: Co 3, Co 2.
Horsegram	: Paiyur-1
Soyabean	: Co 1, ADT 1, Co 2.
Lab-lab	: Co 10, Co 11, Co 12, Co 8, Co 9.
Mcchai	: Co 1, Co2.
Limabean	: LBS 1
Swordbean	: SBS 1.

In the last two decades (1972—1992) the Tamil Nadu Agricultural University, has released 64 improved varieties in different pulse crops. Among these about 15 are popular among the farmers.

For the first time in 1994, TNAU has released a hybrid variety in redgram COH 1.

iv) Oilseeds

Groundnut	: Co 2, VRI 1, VRI 2, VRI 3, BSR 1, TMV 12, Co 1, ALR 1, ALR 2, POL 2, TMV 11.
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Among the varieties released, only five varieties viz. TMV 7, CO 2, VRI 1, VRI 2, VRI 3, are popular in Tamil Nadu.

One culture viz. VG 78 which is resistant to leaf spot disease is now under advanced evaluation.

Sesamum	: VRI 1, Co 1, SVPR 1, Paiyur 1.
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All the varieties listed are popular with the farmers of Tamil Nadu. Among the high yielding varieties, the variety TMV 6 contains the highest oil content of 54. 0 per cent.

Sunflower	: Col 1, Co 2, Co 3.
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Two promising hybrids viz. 85151 (2A x Co 2) and 85144 (2A x Ec 68414 10 kr) are under advanced stages of testing in ART and in all India Coordinated Trials.

Coconut	: VHC 1, VHC 2, VPM 3.
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Coconut research is being carried out at Veppankulam (Thanjavur district), Alyarnagar (Coimbatore district) and Coimbatore. Forty varieties of coconut are maintained at Veppankulam and Aliyarnagar.

Based on critical evaluation of germplasm, the following genotypes have been identified for different economic characters and those are being utilised in hybridization programme.

- i) *High setting and yield* : Lakshadheep ordinary, Lakshadeep Micro, Andaman Ordinary
- ii) *High female flower production* : Lakshadeep Micro.
- iii) *High female flower production* : Lakshadeep Micro, Aiyirankachi
- iv) *High Oil content* : Lakshadeep Micro and Lakshadeep Ordinary
- v) *High copra content* : Philippines, New Guinea, Federal Malay States, Cochin, China, Sanblas, Sanramon.
- vi) *Drought tolerance* : WCT, Sanramon, Lakshadeep Ordinary
- vii) *Varieties suitable for tender coconut* : Cochin, China, Aiyirankachi, Semi tall red, Semi tall orange and malaysian Yellow.

Based on testing large number of tall x dwarf and dwarf x tall, two T x D hybrids viz. VHC-1 (ECT x CGD) and VHC-2 (ECT x MYD) have been released for Tamil Nadu from Veppankulam centre. These give 20 to 40% increased nut yields over ECT. Large scale production and distribution are being done from Veppankulam and through State coconut Nurseries. VHC-1, and VHC-2 are giving 10% increased nut yields over Kerala hybrids.

In 1994 a coconut variety VPM 3 with high copra content (15 kg/palm/year) has been released from Veppankulam.

Cotton : MCU 9, MCU 11, CBS 156, TCHB 213, MCU 2, MCU 4, MCU 8, SVPR 1, MCU 7, ADT 1, MCU 10, K 10, K 11, Paiyur 1.

The research programme is currently oriented towards identification of male sterile system to obviate the cumbersome and labour intensive process of emasculation. The release of CMS base hybrids will give good dividends in the effort to enhance production and productivity of extra long staple hybrids capable of spinning 80s and above and suitable for export to other countries. This export oriented trade in cotton will render sustainable production and benefit the growers, traders and the mill owners alike.

v) Horticulture:

1993

Fig	: Yercaud	Drought tolerant, bears fruits in bunches
Chilli	: PMK 1	Gundu type, suitable for semi-dry cultivation in Ramanathapuram district.
Tapioca	: Co 3	Earl maturing variety, suitable for irrigated and rainfed cultivation. Field tolerant to cassava mosaic virus
Dolichos bean	: Co 1	Short duration
Water melon	: PKM 1	Flesh pink coloured
Gladiolus	: KKL 1	Good keeping quality

1994

Coconut	: VPM 3	High copra yielder
Hybrid Sapota	: PKM 3	Bears fruits in clusters
French bean	: YCD 1	Flat, long, broad pods
Green Chilli	: PLR 1	High yielding dwarf variety

Turmeric	: BSR 2	Mutant from Erode local type
Betelvine	: SGM 1	Dwarf statured vine with vigorous bushy growth

vi) Crop Management

a. Rice

Integrated nutrient management practices for sustaining high yields, simultaneously maintaining the soil health, have been developed. For the soils of rice bowl of Tamil Nadu, maintenance of 80 hills/m and application of 150 kg N/ha during kharif was found to be optimum.

b. Sorghum

Optimum population for higher yield of grain as well as fodder is 1.48 lakh plants/ha.

Enriched FYM which can be easily prepared by farmers results in the saving of 25 per cent of recommended phosphorus.

c. Ragi

Seeds treated with CCC 5 ppm records 12 to 28 per cent increased yield in different varieties.

Spraying of ethrel at 200 ppm on 45 and 60 days after sowing enhances the grain yield by 19.3 per cent, in Co 1 ragi.

d. Maize

Seed and soil inoculation of *Azospirillum* results in higher yields.

In zinc deficient soils, basal application of 25 kg zinc sulphate along with 12.5 tonnes of FYM/ha results in high yields.

e. Redgram

Combined application of 10 tonnes of FYM and 20:40 kg N-P/ha and seed inoculation with *Rhizobium* increase the grain yield 77 per cent over control under irrigated conditions.

Supplementary foliar application of N, P and K at 10.0, 2.6 and 1.7 kg with 40 gm of succinic acid on 55 and 70 days after sowing improves the seed quality by 18 per cent.

vii) Crop Protection

Tamil Nadu Agricultural University has done intensive research on integrated pest management (IPM) strategy on major crops like rice, cotton, groundnut and sugarcane. There was a period in Tamil Nadu when aerial spray of pesticides was advocated for the management of pests, which destroyed the beneficial organisms also. Now calendar based spray schedule has almost gone and there is a big awareness among the farmers to adopt economic threshold level (ETL) based application of pesticides. After the introduction of IPM in our state outbreak of major pests and diseases is almost absent. During early 1980s rice brown planthopper, blast, and tungro were widely prevalent. In cotton white flies caused major damage. Red hairy caterpillar and groundnut was causing havoc. Now all of them occur only in packets and are controlled or checked almost immediately without any serious damage. We are now able to grow rice crop throughout our state without any major problem. Tungro may occur in small areas, but further spread is checked effectively. It is the major contribution of the scientists of TNAU.

Mushroom Production

The mushroom Co 1 developed by TNAU is very popular. In 126 monthly training programmes about 10,320 people were trained on oyster mushroom

production. Seven trainings of one-week duration were organised for rural women and unemployed youths in which 216 persons were benefited.

viii) Ongoing Programmes

In the Tamil Nadu Agricultural University, 389 ongoing research schemes as listed below are in operation in the different research stations and main campuses to cater to the needs of the farming community of our state:

Plan schemes	: 132
Non-Plan schemes	: 16
ICAR Coordinated Schemes	: 49
National Agri. Research Projects (NARP)	: 16
ICAR Adhoc schemes	: 60
Govt. of India schemes	: 45
International Collab. schemes	: 22
Private Agencies' schemes	: 47
State Government schemes	: 18

ix) Bio-Technology

During the past decade following protocols have been evolved for adoption:

(i) Regeneration Protocols:

Regeneration system in Rice, Sorghum, Pear millet, Ragi, Cenchrus, Fodder Sorghum, Cumbu/Napier hybrid.

Continuous *in vitro* systems studies in recalcitrant or difficult to regenerate are being studied to have a break through in Cotton, Sunflower, Gingelly, grain legumes and groundnut.

Cotyledonary callus for regeneration protocol:

Sesamum, Cotton, grain legumes and sunflower for application in genetic transformation.

(ii) Micropropagation:

Protocols and techniques including hardening are developed for adoption and technology transfer.

1. Banana (Shoot tip and Inflorescence tip)

2. Neem 3. Cassava, 4. Rose, 5. Eucalyptus, 6. Casuarina.

Microtubers technology:

Potato, Ginger (Microrhizome)

Synthetic seeds in Ragi

In vitro shoot tip: Cotton, Sunflower, Sesamum, legumes for genetic manipulations.

(iii) Protoplast Culture:

Regeneration protocol in *Japonica* and *indica* rice.

Protoplast fusion techniques through electrofusion and PEG.

Protoplast isolation and culture in Ragi, Chola, Sunflower, grain legumes and Cotton.

(iv) Anther Culture:

Protocols/Technologies for anther culture in rice and sorghum for generation of Doubled Haploid.

Microspore culture in IR 50 rice.

(v) Albumin gene:

The 12 KD albumin from primary axis of mungbean homologous to 2S albumin has been isolated, and purified. Genomic and cDNA libraries were constructed and screened for identifying the gene. The ultimate aim is to make gene constructs for this albumin and to transfer to rice plant.

(vi) Genomic organisation:

Comparative molecular dissection of genomes of indica and japonica and wild progenitor (*O. rufipogon*) has been made with subtractive hybridisation and microsatellite technique RFLP. It is followed for identifying DNA sequences linked to the genes for resistant leaf folder and Yellow stem borer. Gene pyramiding for BPH resistance with marker aided selection is in progress.

(vii) Genetic Enhancement:

Protoplasts of CO 45 and IR 50 are in evaluation, DH of indica and japonica are nominated for MLT in TNAU. Additionally, DH breeding lines are in PYT and CYT.

Somaclones of IR 50 and IR 20 are in PYT.

Mapping population of DH of IR 50/*O. rufipogon* is in evaluation.

Technique Development:

Cell and Molecular Biology techniques for crop research are being developed. In this Centre PCR, Southern, Western and Northern blots gene cloning, DNA and protein purification and analysis technologies have been standardised.

TAMILNADU SCIENCE AND TECHNOLOGY CENTRES

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album
ess:
Mandapam Road,
Engineering College Post,
as-600 025.

Background

Status of the SIRO

: Autonomous Body (Association)

Year of establishment

: 1983

Major objectives

: (i) To spread and popularise Science and Technology among the general public in the rural and urban areas, by setting up Science Centres in different parts of Tamilnadu.

(ii) To supplement and complement the formal Science Education imparted in Schools and Colleges.

Major research areas

: Popularisation of Science and Technology, Astronomy and Low Energy Accelerator based Research.

Developed 14 Planetarium Programmes and 7 Halls of Sciences consisting of about 400 exhibits on the themes Popular Science, Transport, Electronics & Communication, Physical Science, Material Science, Life Science, Innovation, and several outdoor exhibits.

Initial recognition as SIRO

: June, 1984

Income and R & D expenditure

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations Received (Cash and Kind)	5.80	3.50	4.85
Grants Received	46.85	43.60	33.60
Other Items (Internal generation of funds)	19.64	17.23	18.20
<i>Expenditure on R&D</i>			
• Capital	18.78	15.39	4.85
• Recurring	48.21	51.11	54.03

Infrastructural facilities

Land and Building

: Area : 21.25 acres

Equipment Facilities

: Value: Rs. 500 lakhs

Gross value: Rs. 91.00 lakhs

List of sophisticated equipments

- (i) Planetarium Main Projector
- (ii) Workshop Equipments
- (iii) Sound Studio Equipment
- (iv) H.T. Station

R & D Manpower

	Qualification	Full time
Scientific and Technical	Doctorate	3
	Post Graduate	12
	Graduates	1

Library facilities

: The Centre has a well equipped library with Books and Journals (national and

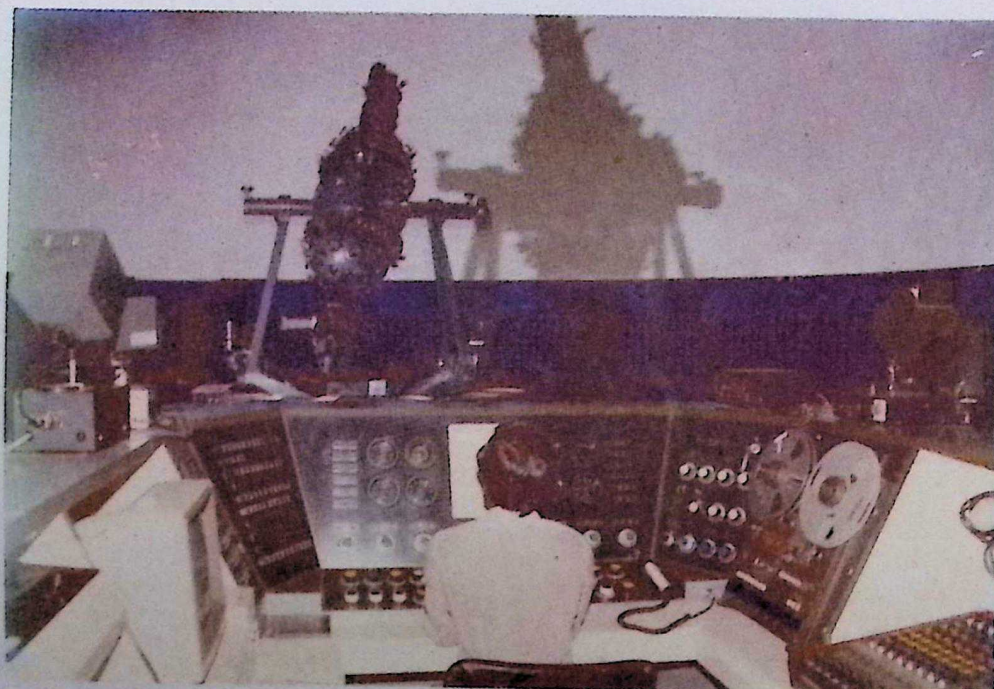
International) pertaining to various themes on Science and Technology

Major achievements claimed

- Technologies developed and transferred for upscaling commercialisation :
- Over 400 Interactive exhibits for popularisation of Science and Technology.
- Technologies developed and ready for upscaling:
Over 400 Interactive exhibits for popularisation of Science and Technology.
- New Techniques/methodologies developed and implemented:
Hands on exhibits for ease of learning by the students.
- Research papers/Reports published : 4
- Seminars/Conference attended/organised:
Seminars, Workshops and quiz Programmes are conducted periodically for the School children on various themes on Science and Technology such as Energy, Environment, Astronomy, etc.
- Awards won:
The Mobile Science Exhibition (Museo Bus) of this Centre has participated in the Second All India Mobile Exhibitions held at Krishnagiri, Dharmapuri District and was awarded II prize in Jun 1993.
- Any other:
As a part of the extension activities, the Museo Bus with 24 built-in exhibits is touring most of the Districts in Tamilnadu and conducting Mobile Science Exhibitions for the School children. Mini Planetarium programmes are also conducted along with this. Around 8 lakhs School children have got benefitted through these programmes.

Name and Designation of five Senior Researchers

- Dr. C.P. Gopalaraman, Executive Director
- Dr. M. Sarguru Moorthy, Director.
- Er. R. Madhavan, Joint Director (Electronics)
- Dr. P. Iyampuram, Joint Director (mechanical)
- Shri T.M. Alagiri Swamy Raju, Scientific Officer.



Planetarium Projector with Control Console

TEA RESEARCH ASSOCIATION

Background

Status of the SIRO : Association
 Year of establishment : 1964
 Major objectives : To carry out and promote research on all aspects of tea cultivation and processing with the principal objective of improving overall productivity and quality & Develop machinery for cost effective continuous tea manufacturing.

Major research areas : various research projects of Tocklai are carried out in eight research departments-Botany, Soil & Water Management, Agronomy, Plant Protection, Engineering & Manufacturing Technology, Bio-chemistry, Statistics & Agricultural Economics and Tea Tasting.

Income and R & D expenditure:

	<i>(Rs. in lakhs)</i>		
<i>Income</i>	1992-93	1993-94	1994-95
Donations received	80.00	373.69	146.19
Grants received	41.43	60.02	39.70
Other income	284.00	383.33	406.42
<i>Expenditure on R & D</i>			
● Capital	108.70	97.21	161.44
● Recurring	233.19	259.49	253.15

Infrastructural facilities:

Land & Building Area : Value : Rs. 345.84 lakhs (1993-94)
 Equipment facilities : Gross Value : Rs. 100 lakhs.

List of sophisticated equipment

High Precision Liquid Chromatography
 Gas & Liquid Chromatograph
 Atomic Absorption Spectrophotometer
 Spectrophotometer
 Auto analyser
 N-15 analyser
 Spectra Mass
 Autoporometer
 Ion analyser
 Capillary Electrophoresis

R & D Manpower :

	Qualification	Full Time
Scientific & Technical	Appropriate	212
Social Sciences and Others	—	296
Library facilities	: 6238 books; 13,200 bound periodicals; regularly subscribing to around 100 journals & photocopying facility; TRA's regular publications are halfyearly journal 'Two & A Bud', Annual Scientific Report, Conference Proceedings, Bulletins, Leaflets etc.	

Major achievements claimed :**Achievements in Tea Research,
Collaborative Projects & Transfer of Technology :**

- (i) **Planting Material:** Tea Research Association has so far released 30 clones and 11 hybrid seeds to the industry. It has helped the industry in selecting 136 region specific clones. A large number of polyploids have been produced for commercial exploitation.

Biotechnological approach has so far contributed in standardization of tissue culture technique, development of haploids and rapid clonal multiplications. Initial success has been obtained in genetic engineering through protoplast isolation and culture.

- (ii) **Nutrition:** Region specific requirement of major and micronutrients for tea has been optimised. Break-throughs in productivity have been achieved through balanced manuring with micro and secondary nutrients like zinc, magnesium, boron, sulfur etc. Recommendations are made to tea estates on the basis of soil-test crop correlation and response surface from location specific trials. The importance of organic matter status in the soil has been emphasized. To improve the fertiliser use efficiency investigations by Radio Tracer technique are in progress.

- (iii) **Drainage & Irrigation :** At estate level, catchment planning is being practised to tackle the drainage problem. Remote Sensing Technology is utilized to identify the geomorphic units to formulate drainage planning based on topography and geomorphology.

Siltation of river beds of the Brahmaputra and the Barak and its arterial system has aggravated the drainage problem of the tea areas in flat land. Moreover, encroachment and blockage of natural waterways due to increasing pressure on land has complicated the outfall problem. To counter these situations, artificial outfalls are created. During November to April, which is the period of soil moisture deficit, sprinkler irrigation has shown 10-20% crop increase.

- (iv) **Physiology:** Valuable findings have been made on Harvest Index, benefits of shade, diurnal change in dry matter accumulation, and stimulation of vegetative growth by growth promoting substances. Application of Growth Promoters has increased yield by 12-14%.

More leaf area in the top 10 cm of the canopy, higher Leaf Area Index, low photorespiration and higher assimilate partitioning towards the growing two & a bud shoots are the characteristic features of high yielding clones.

A protocol for the cryopreservation of tea seeds has been developed in collaboration with the National Bureau of Plant Genetic Resources (NBPGR), New Delhi.

- (v) Agrotechniques: Longer pruning cycle was introduced in the sixties for increasing total crop and obtaining an even distribution of annual harvest. A crop increase of 7 to 20% can be obtained by adopting pruning cycles of different lengths.

Janam plucking produces best result under N.E. Indian conditions and standard plucking at 7-9 days interval is best for a balance between crop and quality.

It was found that Shear plucking could be an aid to hand plucking during the peak cropping period from July to September. It could increase the pluckers productivity by 40-60%, use of plucking machines could increase the productivity further to 211% per manday over hand plucking.

A high positive correlation could be observed between mean monthly temperature and crop distribution. The thermal time required by buds to attain pluckable shoot size is found to be 389 day degrees without limitations of environmental factors.

Rejuvenation pruning, infilling and consolidation has increased productivity by 2 to 4 times.

- (vi) Pest & Disease: The present approach has been to find out biopesticides without any hazards of residue and environmental pollution. In the light of increasing awareness about adverse effects of pesticide residues in food on human health, which is often reflected in adoption of more and more stringent regulations by many countries, it has been decided to establish a well equipped pesticide residue laboratory at Tocklai following Good Laboratory Practices. The facilities are utilized to generate data for establishing Maximum Residue Limits (MRL) of pesticides in tea with a view to developing safe plant protection schedules and pre-harvest intervals (PHI) to help the Tea Industry to meet a more quality demanding market.

Efforts are also directed towards integrated approach to pest and disease management through uses of chemicals, biocides, parasites, predators and cultural methods. For biological control of pests, survey and detection of natural enemy complex of pests is in progress. Experiments on mass breeding of promising species of parasitoids and predators of the major tea pests are also in progress under controlled laboratory conditions.

Aerobiological and climatic studies have enabled to forecast certain diseases for taking up prophylactic measures. Studies indicate that bioagents like *Trichoderma viride* and *T. harzianum* control *Poria hypoburrunnea*, Charcoal stump rot and Brown root rot diseases and *Bacillus subtilis* for Black rot caused by *Corticium* sp.

- (vii) Tea Chemistry: The contributions of theaflavins (TF) and thearubigins (TR) towards colour, strength, briskness and creaming properties of the brew, the role of chlorophyll in appearance, and volatile components like linalool for flavour and quality have been established.
- (viii) Tea Machinery: The important machineries developed by Tocklai and extensively used by the industry are McTear Rotorvane, Withering Tunnel, Continuous Tea Tray Drier, Continuous

Fermenting Machine, Borbora Leaf conditioner, Boruah Continuous Roller, Tocklai Tea Breaker, Leaf Storage System and Continuous Withering Machine.

Collaborative Projects

Tocklai has also taken up a few collaborative projects with some leading institutes of the country which include making tea manufacture a continuous process by integrating a PC-based monitoring system, studies on the pharmacological values of tea, studies on the physiological and medicinal values of tea, tissue culture and advanced studies on the ground water potential in some selective areas of North East India.

Transfer of Technology

The Advisory Department with its extension network throughout the tea districts of south Bank (Tocklai), North Bank, Upper Assam, Cachar, Tripura, Dooars (Nagrakata Sub-Station). Terai and Darjeeling deals with the transfer of technology at field levels. The results of R & D have been made more effective and meaningful through this network of advisory centres. Effective dissemination of technological knowhow and creation of a meaningful communication link between the industry and research are achieved through the means like—

- (i) **Estate Visits:** Two or three routine visits are paid to each estate in a year to advise on time-specific problems on various aspects of Tea Husbandry. Need based or special visits are paid to attend to problems not covered by routine visits.
- (ii) **Area Scientific Committee (ASC) Meetings:** The ASC meetings are held in different regions covering agricultural subjects and Engineering & Manufacturing Technology to get feed-back from the industry on various problems and research needs and to help dissemination of technical knowledge and information amongst members of TRA. This is a forum of interaction between Scientists and Tea Planters.
- (iii) **Supervisory Staff Training:** Training of supervisory staff of tea estates is also undertaken to transfer technology to the grass root level. It helps in the percolation and understanding of the art of technology from top to the grass root level.
- (iv) **Other Training Courses:** Three-Month General Training Course in Tea Culture and Six-Week Vegetative Propagation Course are organised at Tocklai for the employees of member estates. Sometimes such courses are arranged for the candidates from non-traditional tea areas of N.E. India also.
- (v) **Lecture Courses:** Short-term courses for planters on subjects like Field Management, Soil and Water Management, Engineering and Manufacturing Technology and Agri. Economics are held at Tocklai.
- (vi) **Publications:** Of the other means of transfer of technology the most important ones are publication of Encyclopaedia Serials. Advisory Bulletins. Advisory Leaflets, Wall Charts, Special Bulletins, Occasional Scientific Papers and organisation of and participation in In-House Seminars. Besides these, a half yearly journal Two and a Bud and Annual Scientific Report Are published regularly to keep the Industry aware of the current activities of TRA.

Name and Designation of five Senior Researchers

- Dr. I.D. Singh, Butanist
- Dr. P. Roy, Biochemist
- Dr. A.C. Borbora, Agronomist
- Dr. K. Singh, Entomologist
- Dr. B.K. Konwar, Biotechnologist

THAPAR CORPORATE RESEARCH AND DEVELOPMENT CENTRE

Address

Post Box No. 68,
PATIALA-147 001,
India.

Background

Year of establishment

: Established in 1982

Major objectives

: Undertaking Research and Technology development of value to the Thapar Group in particular and industry in general;

Acting as Resource Centre for technical development and dissemination of information;

Interacting with Thapar Institute of Engineering & Technology for mutual benefits and growth of the latter;

Interacting with other national and international educational and R&D institutions; and

Promoting professional growth of the technical staff of the Thapar Group.

Major research areas

: Biotechnology; Chemical Engineering; Energy Systems; Materials Science; Mechanics & Computers; Information Sciences.

Income and R & D expenditure:

			(Rs. in lakhs)
<i>Income</i>	1992-93	1993-94	1994-95
Donations Received	230.00	250.00	262.00
Grants Received	8.09	1.62	—
<i>Expenditure on R&D</i>	—	15	79.36
• Capital	75.69	64.05	204.35
• Recurring	148.47	158.65	204.22

Infrastructural facilities:

Land and Buildings : 6466.10 m²
(Area available for research) 550.00 m²

Land and Buildings : Rs. 507.49 lakhs
(Including Plant & Machinery, furniture, etc)

Equipment (including : Rs. 517.23 lakhs
library books/journals, vehicles, etc.)

List of sophisticated equipment/instruments :

The laboratories are well equipped with constituted facilities like GC, Cell Homogeniser Double beam atomic spectrophotometer, EDS System, VS-VIS scanning spectrophotometer, etc.

R & D Manpower:

	Qualification	Full Time
(i) Scientific & Technical	Doctorates	17
	PG Diploma	6
	PG	21
	Graduates	10
	Others	17
(ii) Social Sciences and others	PG	8
	Graduates	22
	Others	20

Library facilities

: It provides library services and information services such as procurement of documents, translations and reprographic services to not only to the Centre but also to Thapar Institute of Engineering & Technology and Thapar Group Companies. A special feature has been the addition of "Inside Information" on CD-ROM diskettes. This database given access to the contents of 10,000 most heavily used journals of the world. It may be mentioned that engineering information in the form of compendex on CD-ROM diskettes has already been available with the department.

It also interacts and co-operates with regional and national institutions and business enterprises. It has recently opened its doors to industrial units of Patiala region and offers its information services to them on 'no profit no loss basis'. During the year, DLI reached out its users through its current awareness digests such as Current Currents (Monthly), TCRDC Patent Digest (Quarterly), Press Snippets (Monthly), Accession List (Monthly), apart from special information circulars and literature searches. The Library has the following facilities:

- Binding
- Cyclostyling
- Microfiche Reader
- PC/XT (2 Nos.)
- Overhead projectors
- Photoduplicators (Modi Xerox 1025 & 1045)
- Slide projectors
- TV & VCR

Major achievements:

- Technologies developed and transferred for upscaling/commercialisation:
- Spirulina with the assistance of Spirulina Farm, Nanjangud, Karnataka.

- Installed a system for secondary air injection in shaft lime kiln
- Software for computer aided design of heat exchangers for diesel engines.
- Enzymatic modification of starch and its application in surface sizing of paper.
- First ever mill scale trial on enzymatic bleaching of pulp in the country demonstrated at BILT-Choudwar, establishing technical feasibility.
- Large scale plant trials to test efficacy of plant growth regulator on eucalyptus, Australian flowering shrubs, litchi and mango.
- A cost-effective and viable protocol has been evolved for the preservation of bamboo, based on scientific and managerial approaches, to minimise the losses due to termite, fungal and borer attack.
- Water Audit has been completed for BILT, BPM, by identifying the areas of savings. Water conservation strategies have been worked out. A potential of Rs. 32.00 lakhs per annum savings (minimum) has been identified.
- Energy Audit has been completed for BILT, BPM. By implementing some of the suggestions, savings of Rs. 13.8 lakhs per annum have been achieved with a very little investment.
- Hard-chrome plated cylinder liners.
- Technologies developed and ready for upscaling:
 - A simple, cost-effective and pollution-free protocol has been devised for the enzymatic upgradation of corn gluten.
 - To conserve the prehydrolysate emanating from the preparation of Rayon grade pulp, biomethanation project for the generation of bio-gas has been completed.
 - The project on preparation of food/pharma grade papain.
- New Techniques/methodologies developed and implemented:
 - Water consumption pattern and waste water recycling identified.
 - Computer aided design of heat exchangers for diesel engines.
 - Cast Iron Cylinder Liners of small diesel engine were hard chrome plated in order to increase their life.
 - Strategy for Bamboo preservation due to termite, fungal and borer attack devised.
 - A process for enzymatic bleaching of bamboo pulp.
 - A process for the synthesis of aluminosilicate scaled up.
 - A process on the use of enzyme in the production of rayon grade pulp.
 - An anaerobic process for the energy generation from dairy effluent in high rate bioreactor.
 - Enzymatic upgradation of corn gluten from 50% protein to 75% protein.
 - Improvement of the following products were undertaken:
 - Improving the quality of rayon-grade pulp in terms of low pentosans and high brightness by the use of enzyme.

- Condensate recovery enhancement in pulp mill.
- Efficiency improvement of coal fired boilers through excess air control.
- In view of enhancing the performance of Vacuum Interrupters, Mechanical Alloying of Copper-chromium was effected. Mechanical alloying led to refinement in microstructure and reduction in processing time.
- A large number of failure cases were analysed. The investigations led to improvement of products.
- Optimization of induction motor design extended for new types of design and user interface.
- Modified the software for automatic nesting of irregular shapes to reduce wastage.
- Studied the torsional vibration damper based on viscous damping.
- Patents filed : 3
- Research Papers/Reports published : 78
- Seminars/Conferences Conducted/attended : 31
- Awards won :

The paper 'Turbocharger Matching Calculations-A Case Study' co-authored by Mr. M. Makkar and Dr. J. K. Sharma was awarded the Best Prize in the Technical Development Section, amongst the papers presented in the poster sessions of the XII National Congress on Internal Combustion Engines and Combustion held at the Indian Institute of Petroleum, Dehra Dun.

- Any other :
 - The Centre has signed an MoU with CRRI, New Delhi on licensing of ASCOMID software.
 - The Centre is proposing to sign an MoU with IP Bardin Central Research Institute for Ferrous Metallurgy, Russia. The scope of this MoU is to harness the vast scientific infrastructure and expertise existing in the Russian Research Institutes under their Ministry of Science and Technology. The broad features of the MoU would be to identify joint research projects with a view to commercialise technology locally or globally in areas of mutual interest, subcontracting research projects to specialised Russian Institutes and hiring of Russian experts for short durations in a few selected areas.
 - An Initiative has been taken on sharing of resources, particularly Library and Information Services, with other industrial units of the Patiala and its peripheral region, on cost basis. Apart from a good Public Relations exercise, it is expected to supplement our financial resources. M/s Amrit Banaspati Co. Ltd., Rajpura and M/s Stephan Chemicals Ltd., Rajpura, have already become the subscribers.
 - The plantation of 1250 plants on the campus and 385 seedlings of eucalyptus and bamboo on the BTDR research farm is hoped to enrich community life and boost R&D activity in the desired direction. If Bamboo shows higher productivity as a result of application of soil conditioner/PGR, it is proposed to plant bamboo on 95 acres land, which at present is under wheat and paddy plantation. This will not only earn higher returns for the Campus, but also beautify it.

Name and Designation of Senior Researchers:

- Dr. Kapoor MP, Director
- Dr. Bajpai PK, Research Engineer Head, Chemical Engg.
- Dr. Kothari RM, Research Scientist Head, Biotechnology
- Mr. AK Aneja, Research Engineer Head, Energy Systems
- Dr. Verma P., Research Engineer Head, Materials Science
- Dr. Lall AK, Research Engineer Head, Mechanics & Computer

THE BOMBAY TEXTILE RESEARCH ASSOCIATION

Address
Bahadur Shastri Marg,
Mankhurd (West),
Bombay-400 086.

Background

: The Laboratory is a configuration of world class infrastructure set up with a massive grant from the GOI and UNDP.

Major objectives/Research Areas

: As in the previous years, BTRA concentrated its efforts on R&D on polymeric finishes, eco-friendly products/processes, standardization of testing procedures for red-listed chemicals, application of biotechnology to wet processing, structured needled nonwoven carpets, application of natural dyes in dyeing etc. A good deal of work has been done in these areas. The consultancy activities including testing of fibre/yarn/fabric/auxiliaries/spares maintained the usual pace. In fact, they were a little on the higher side.

Major achievements claimed

(i) The Technical Reports were forwarded to the Ministry of Textiles, Government of India during the past three years are—

- Field trials on BTRA's low cost modifications on non-automatic loom to improve fabric quality, increase fabric piece length and improve efficiency of powerloom sector;
- Development of nonwovens from cellulosic fibres;
- Processing of polymeric waste materials generated by the fibre manufacturing industries to develop various auxiliaries for textile use and lamination for composites;
- Development of hand-operated hank dyeing machine for use in the handloom sector;
- Effect of additives on fastness characteristics and formaldehyde release of dyed durable press finished cotton fabrics;
- Development of cost reduction and quality improvement products and processes for chemical processing of textiles, with special reference to the requirements of the decentralised sector of the textile industry;
- Development of microprocessor-based instrumentation system for measurement of tensile strength and elongation characteristics of textile material;
- Development of high performance textile scourable oils jointly by BTRA, IOC Ltd. (Faridabad) and NTC(SM);
- Evaluation of integrated system of synthetic thickener, binder and softener for 100% substitution of kerosene in pigment printing of textiles jointly with ATIRA, Ahmedabad.

(ii) ISO: 9000/IS 14000 ACTIVITY

- The multidisciplinary task force set up for offering consultancy, provides expertise and assistance to member mills in the introduction of Total Quality Management (TQM) to obtain accreditation under ISO 9000/IS 14000 standards.

So far, seven mills have received the coveted certification for whom BTRA had extended consultancy in this specialised area. Five mills are ready for certification audit. Work is in progress in the remaining seven mills.

(iii) AID TO DECENTRALISED SECTOR

- Under an on-going project sponsored by the Ministry of Textiles, Government of India; BTRA has established yet another Powerloom Service Centre at Madhavnagar—Vita in Maharashtra, thereby raising the number of BTRA Powerloom Service Centres to three (Ichalkaranji, Solapur and Madhavnagar-Vita). All the Centres provide the much-needed shop-floor technical service to the powerloom weavers/owners. Need-based yarn/fabric testing facilities are also available at these Centre. Besides, Training Programmes/Workshops/Seminars are held in topical subjects with a view to improve the technical competence of the persons associated with this sector at different levels.
 - A 40 minute video cassette “Zeene Zeene Re Chadaria” has been developed for the powerloom weavers which depicts correct work practices;
 - Low cost modifications for non-auto looms developed.
- A product for single stage printing of P/C blended fabrics with disperse/reactive dyes developed which permits printing of both components in one operation. A lab model, two compartment jigger also developed.
- Novel dyeing and printing processes with high standards of fastness and sesthetic appeal have been developed. The samples were exhibited at the 2nd International Silk Fair; Resham India'92 at Delhi.
- Microprocessor-based system for silk testing and grading has been developed and installed at Silk Exchange, Bangalore.
 - A Computer Aided Designing Centre to help the Powerloom Sector has also been set up at Solapur which is known the world over for its terry towels and chaddars.

(iv) RESEARCH PROGRAMME

- Completed & On-going

In 1992 thirty-one projects sponsored by various agencies viz., Ministry of Textiles (MOT), United Nations Development Programme (UNDP), Petroleum Conservation Research Association (PCRA), Department of Electronics (DoE), etc., were on hand of which seven were completed. In 1993 seven new projects were initiated besides the thirty sponsored projects which were on hand. During the current year, seven sponsored projects were completed. Presently 21 sponsored projects are on hand. Besides the sponsored research projects, around 30 in-house short term, result oriented projects are at various stages of completion.

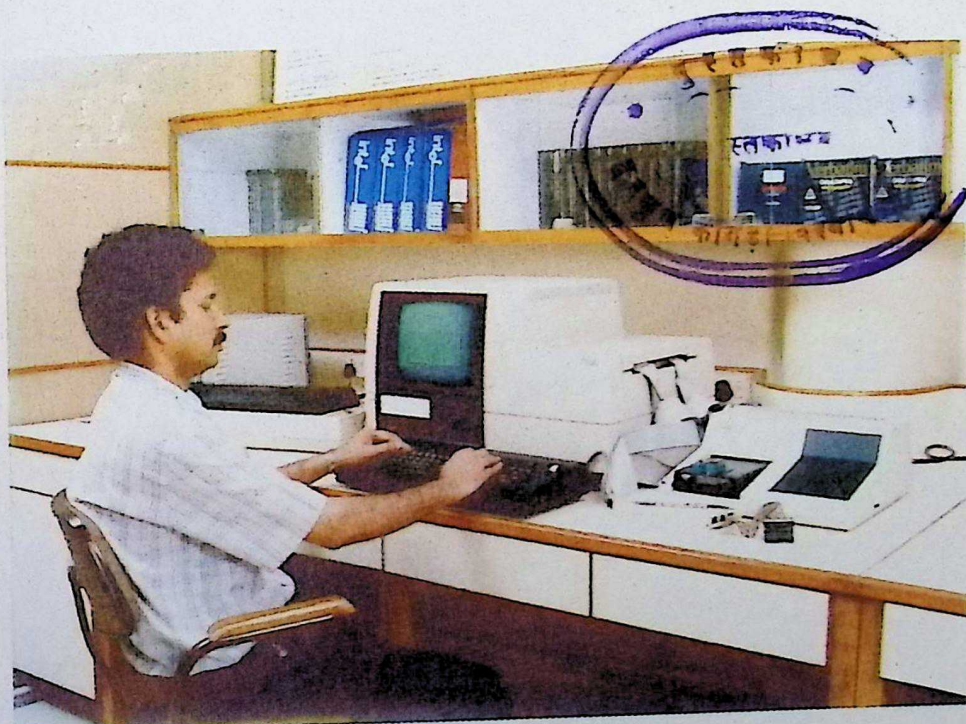
The emphasis of all the projects whether sponsored or in-house has been on eco-friendly products/textile processes; standardization of testing procedures for red-listed chemicals; application of bio-technology to wet processing, recycling of polymeric wastes, development of diversified value-added jute products, development of microprocessor-based textile instrumentation systems, nonwovens, use of natural dyes in wet processing for various types of substrates and so on.

- Seminars/Tailor-made training programmes are organised by BTRA every year. Compared to the earlier years the activity was on a low key as the BTRA Scientists and Technologists spent a good deal of their time on sponsored/in-house projects, liaison/consultancy/testing activities, etc.

(v) Over 130 publications have been brought out during the last three years. A particular mention may be made about the Carding Monograph which highlights the work done by BTRA in Carding during the last 3½ decades. Other publications include Bibliographies, Man-made Fibre Blended Yarn Quality in Export Sorts in the Mills, Survey of Terry Towel Weaving in Solapur, etc.

(vi) LIAISON AND TECHNICAL CONSULTANCY

Technical Investigations Carried Out	:	1064
Technical Enquires Attended	:	2302
Mill Visits Made		
Local (Man Days)	:	15463
Outstation (Man Visits)	:	995
No. of Samples Tested	:	54390
No. of Reports Issued	:	23895



Microcomputer Development System (MDS)

THE GANDHIGRAM INSTITUTE OF RURAL HEALTH AND FAMILY WELFARE TRUST (GIRH & FWT)

Address:

Gandhigram (PO),
Dindigul Anna District,
Tamil Nadu-624 302.

Background**Status of the SIRO**

: Started as Pilot Health Project in the year 1959, this Voluntary Organization has been established as an Institution in the year 1964.

Major objectives

- : (i) Organising Training Courses for Health and Family Welfare Staff and trainees from various Institutions.
- (ii) Conducting research in Health & Family Welfare.
- (ii) Developing methods and techniques for the Delivery of Health Care and Family Welfare Services.
- (iv) Demonstrating improve Health & Family Welfare practices.

Major reseach areas

: Population, Health Maternal and Child Health, Family Planning, Fertility, Mortality, Environmental Sanitation & Communication.

Initial recognition as SIRO

: May, 1975

Income and R & D expenditure

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donations received	Nil	Nil	Nil
Grants received	68.40	48.65	57.50
Other Income	13.74	10.35	22.89
<i>Expenditure on R & D</i>			
• Capital	12.00	2.50	—
• Recurring	75.45	61.57	93.00

Infrastructural facilities

(Rs. in Lakhs)

Land & Building

: Land (Value) : Rs. Nearly one lakh
Building (Value): 69.15 lakh

Equipment facilities

: Gross value : Rs. 1.0 Lakh

List of equipments

- : Computers Unit,
- : Projector,
- : Duplicator,
- : Xerox Machine,

Lab Equipments for Nutrition & Public Health.

R & D Manpower : 45

Library facilities :

Library has a collection of books and periodicals on Health, Population, Psychology, Communication, Nursing, Sociology and so on. The Library subscribes to 56 periodicals and to the Global Catalogue of WHO Publications. Regular Publications from Education Institutions and Foreign Mission are received on Gratis.

Major achievements claimed

- i) Since its inception, the Gandhigram Institute of Rural Health and Family Welfare Trust has contributed a lot to the field of Health and Family Welfare Research, that it has completed more than 200 studies to its credit. The research is done on the following eight areas-viz., Fertility and Mortality, Family Planning, Nutrition, Communication and decision-making, Health Care and Health Management, Environmental Sanitation, Studies on Attitude Measurement and Development of Sociometric scales and studies/ Evaluation of various Health-related programmes. These studies served as cornerstone in planning the development programmes of country. From the academic year, 1992, the following studies have been completed viz.
 - (i) An examination of linkages between Maternal and Child Health Services and Family Planning.
 - (ii) National Family Health Survey
 - (iii) Evaluation of Family Welfare Mother & Child Health Programmes, in Kamarajar District of Tamilnadu.
 - (iv) Evaluation of Family Welfare, Mother and Child Health Programme in Dharampuri Dist. of Tamilnadu.
 - (v) Study on Factors determining Low Age at Marriage of Females and Differential pattern in different regions of India.
 - (vi) Surveillance System for Sterilisation;
 - (vii) Evaluation of One day Training Programme on Sanitation for Headmasters of Primary Schools in Periyar District.
- ii) With the Grants-in-Aid from the Government of India, Ministry of Health and Family Welfare, the Rolling Fund Scheme has been initiated through this Institute. Under this scheme, the Institute has been guiding smaller Non-Governmental Organisations in Tamilnadu for participating in Family Welfare Programmes.
- iii) The Institute is conducting Long-term and short-term training programmes. The long-term programmes are—
 - (i) Post-Graduate Diploma in Health Education
 - (ii) Post-Graduate Diploma in Applied Nutrition and Dietetics.
 - (iii) Diploma in Public Health Nursing.

(iv) Promotional Course of Auxiliary Nurse Midwives.

(v) Diploma in Medical Laboratory Technology Course.

The Short-term training programme includes training of the Health personnel of Government and Non-Government organisations on various subjects such as Health Management, Epidemiology, Health Information System, Mass Communication, Journalism, Public Relations, Community Approach, Community Health Nursing, Community Nutrition, Maternal and Child Health, Population Research, Environment Sanitation and so on.

iv) The Institute is contacting the community for its research and training programmes. The concurrent field training and Field Practice and the field visit pave the way to analyse the community problems and it further facilitated in conducting a rally on Leprosy, Public Meetings on AIDS, Exhibition on AIDS and imparting education to opinion leaders on various health and family welfare programmes.

The Institute has also published a book on "Primary Health Care" in three volumes that will serve as a resource material for medical and para medical personnel. Another publication on "Health Information System" will enlighten them on methods of data collection.

Whatsoever be the activity the merging point of all the activities of the Institute is to support and promote National and State Health and Family Welfare Programmes of the Country.

The Institute has organised 10 Seminars relations to Epidemiology, Aids, Training Methodology, Counselling, National Family Health Survey, Drugs, Self esteem and Communication and organised 10 workshops on various social topics.

The other activities of the Institute involves

- Exhibition on AIDS and the Family for school children.
- Exhibition on AIDS spread for the Public rally on Leprosy eradication

Name and Designation of five Senior Researchers

- Dr. S. Ponnuraj, Director
- Dr. C.K. Chacko, Assistant Chief, PRC
- Dr. Narayanamurthy, Principal, H&FWTC
- Dr. C. Ramanujam, Research Officer, PRC
- Sri S. Gunasekaran, Research Officer, PRC.

THE INSTITUTE OF INDIAN FOUNDRYMEN

Background :

Status of the SIRO : Institution
Year of establishment : 1950

Major objectives :

To promote the cause of Foundry Industry, To disseminate knowledge relating to metalcasting engineering among the members of the Institute through its official organ "Indian Foundry Journal".

To promote intellectual welfare to the members of the Institute through participation in technical meetings/seminars/workshops etc. organised by the Institute's Chapters/Branches.

To initiate, conduct researches in the science and technology of metal casting and working.

To organise and conduct educational courses on the subjects pertaining to metal casting.

To exchange latest information on foundry engineering in general with the similar organisations of different countries.

Major research areas;

Metal casting processes viz. melting, moulding, casting.

Initial recognition as SIRO : 1978

Income and R & D expenditure

		1992-93	1993-94	(Rs. in lakhs) 1994-95
Income				
Donations Received	:	0.38	1.10	-
Grants Received	:	0.10	0.10	0.10
Other Income	:	-	-	-
Expenditure on R & D				
• Capital :		Nil	Nil	Nil
• Recurring	:	0.99	1.33	0.83

Infrastructural facilities :

Land & Building	Area	Value	Rs. 3.62 lakhs
			R & D Centre Madras
	R & D Centre Madras	1500 Sq. Ft.	Rs. 3.62 lakhs
	IIF HO Calcutta	1510 Sq. Ft.	Rs. 1.19 lakhs
	IIF Delhi	3000 Sq. Ft.	Rs. 13.8 lakhs
	Coimbatore	1150 Sq. Ft.	Rs. 6 lakhs

Equipment facilities : Gross value : 2.41 lakhs

List of sophisticated equipment :

Air condition, Computer, UPS for computer, Plotter, Typewriter, Fax.

R & D Manpower :

	Qualification	Full time	Part time
Scientific & Technical	Doctorate.	2	9
Social Sciences and other			

Library facilities : Central library at Head Office in Calcutta contains books, bound volumes of journals, A number of technical journals are received regularly.

Major achievements claimed :

- *Technologies developed and transferred for upscaling/commercialisation :*

Upgradation of existing technology in melting, moulding, core making, pouring and production of quality castings by publishing books, proceedings of seminars, technical meetins etc.

- *Technologies developed and ready for upscaling :*

The Institute is engaged in updating production processes of metal casting. It has been taking initiative in improving the technologies that are in vogue for metal casting in our country.

- *Technology in process :*

- (i) Application of CAD/CAM in pattern making.
- (ii) Studies on feeding aids for competitive production of stainless steels.
- (iii) A study of expert system for casting defect analysis.
- (iv) Preparation and performance of evaluation of chromium cast iron cutting tools.
- (v) Thermal modification response of Eutectic Al-Si alloy cast under different chemical modification and casting conditions.
- (vi) Technology that improves national environment & pollution.
- (vii) Development of an intricate compressor volute casting.
- (viii) Development of aluminium bronze castings for strategic applications.
- (ix) An intelligent diagnostic system for steel casting.
- (x) Premium Quality ZA-27 alloy through squeeze casting.
- (xi) An intelligent diagnostic system for steel casting.
- (xii) Premium Quality ZA-27 alloy through squeeze casting.

New Techniques/methodologies developed :

1. Low cost mechanisation/automation, model plant layouts and material handling in small/medium foundries.
2. Energy efficient cupolas.
3. Production of Ductile Iron castings from cupola.
4. Development CAD/CAM software S.G. Iron casting.
5. Development of design for converting orthodox cupolas into divided blast types.
6. Standard specimen micrographic developed for determination of structure

● Patent Filed : 1

● Research papers/Reports published

● Seminars/Conference attended/organised :

Presented served progress in the India Fourth congress 1993 to 1995 and bring out Indian Foundry Journal regularly it conducts the India Foundry Congress

● Awards won : Nil

● Any other : Indian Foundry Directory was published in 1993.

Name and Designations of five Senior Researcher :

- Mr. N. Ramachandra, Director
- Dr. S. Seshan, Jt., Director, IIF R & D
- Mr. D.V. Paranjpe-Chairman, TSCC,
- Dr. P.N. Chakraborty, Secretary General,
- Dr. A.K. Chakrabarti, Chairman & Managing Editor, Editorial Board, IFJ,

THE INSTITUTION OF ELECTRONICS AND TELECOMMUNICATION ENGINEERS

Address

2, Institutional Area,
Lodhi Road,
New Delhi-110 003.

Background

- Status of the SIRO : Institution
- Year of establishment : 1953
- Major objectives : To promote the general advancement of electronics, telecommunications and allied subjects and their applications; and
To facilitate the exchange of information and ideas on these subjects amongst IETE members.
- Major research areas : Encourage research and promotes the development of appropriate technologies in its areas of interest.
Publication of research papers. Holds meetings for reading and discussing communications in all areas of its interest.
- Initial recognition by DSIR : June, 1993

Income and expenditure

	(Rs. in lakhs)		
<i>Income</i>	1992-93	1993-94	1994-95
Donations received	4.00	2.00	3.00
Grants received	0.93	16.66	46.00
Other income	60.22	105.77	119.01
<i>Expenditure on R & D</i>			
● Capital	5.47	1.35	1.42
● Recurring	16.88	18.05	17.62

Infrastructural facilities

- Land & Building : A modern towering RCC Structure of 8 Floors Rs. 29.27 lakhs.
- Equipment facilities : Gross Value : 18.38 Lakhs

List of sophisticated equipment

- (i) Computers
- (ii) Photocopying machine
- (iii) Lab equipments Electronics and Telecom
- (iv) DTP
- (v) Audio Visual eqpts
- (vi) Microprocessor Lab

R & D Manpower

<i>Scientific & Technical</i>	<i>Qualifications</i>	<i>Full Time</i>
	Graduate	1
	/Post Graduate	2
	Doctors	
	others	1

Library facilities

- : Salora library-well equipped, full furnished reading rooms, acquisitions-10000 books, 2000 bound volumes of journals.

Major achievements claimed :

Research Papers/Reports : 9
Published
Seminars/Conferences organised : 15

	<i>Theme</i>	<i>Date</i>	<i>Place</i>
(i)	Electronics for Better living	3-5 Apr' 92	Delhi
(ii)	Emerging Seenario in Electronics & Telecom- munication in the year 2000 AD	5-6 Sep' 92	Delhi
(iii)	Space Electronics & Communication	16-17 Jan' 93	Ahmedabad
(iv)	Modern Trends in Comm. Technology	22-23 Jan' 93	Trivandrum
(v)	Workshop on ISO 9000	6 Fen' 93	Delhi
(vi)	Personal Commn. System & Emerging Technologies	1-2 Oct' 93	Hyderabad
(vii)	Emerging Trends in IT	3-4 Feb' 94	Bombay
(viii)	Electronic Industry - The Challenge of Globalisation	7 Mar' 94	Delhi
(ix)	Electronic Access & Security Systems	9-10 apr' 94	Calcutta
(x)	Networking Towards Globalisation	1-2 Oct' 94	Delhi
(xi)	Optical Fibre Communication	29-30 Jan' 94	Pune
(xii)	Interconnect Issues in Telecom sectors	17 Feb' 95	Delhi
(xiii)	Microwave & Millimeter Waves	7-9 Feb' 95	Dehradun
(xiv)	International Conference on Emerging Opto electronic Technolgies (IISc, IETE, JNCASR)	18-12 Jul' 94	Bangalore
(xv)	International Conference on Personal Wireless Communication (IISc, IETE, JNCASR)	17-19 Aug' 94	Bangalore

Name and Designation of Senior Researchers

- Prof B S Sonde, Dean, Faculty of Engg., IISc Bangalore.
- Prog P V Indiresan, Former Director, IIT, Madras.
- Prof S C Dutta Roy, Professor, Deptt of Elect. Engg. IIT, New Delhi.
- Prof R K Arora, Professor, Dept of Comp. Science & Engineering, IIT, New Delhi.
- Prof Deekshatulu B L, Director, NRSA, Bala Nagar, Hyderabad.
- Prof S Pal, Gp. Director, Communication System Division, ISRO, Bangalore.
- Dr S S Agarwal, CEERI Centre, CSIR Complex, New Delhi.

THE INSTITUTION OF ENGINEERS (INDIA)

Address

8, Gokhale Road,
Calcutta-700 020.

Background

The institute established, 75 years ago and aware of its growth through these years. The Institution of Engineers (India), has been dedicatedly serving as the catalyst directed towards professional development of the members and making relentless efforts, in the context of economic liberalization to enhance the quality of life of the people at large.

In this pursuit the Institution, in spite of resource limitation, with its eventful past, stands today, as a hallmark of professional power continuously contributing to the technological destiny of the Nation.

Initial recognition by DSIR

1988

Income and R & D expenditure:

		(Rs. in lakhs)
<i>Income</i>	1992-93	1993-94
Donations received	33.78	53.28
Grants received	Nil	Nil
Other Income	588.47	654.65
<i>Expenditure on R & D</i>		
● Capital	118.87	113.57
● Recurring	529.33	683.30

Infrastructural facilities:

Land & Building : Value: Rs. 346.35 Lakhs

Equipment facilities : Gross Value: Rs. 53.02 Lakhs

List of sophisticated equipment:

- LAN Server
- Work Station
- PC-AT & PC-XT
- Line Printer
- Dot Matrix Printer
- Off Line Data Entry m/c etc.

R & D Manpower:

	Qualification	Full time	Part time
Scientific & Technical	Post Graduates		12
	Graduates		25

Major achievements claimed :

The period 1.4.1994—31.3.1995 was event-packed with focus on the Platinum Jubilee Celebration of the Institution, in different phases at its

different centres, along with wide range of activities as mentioned in brief.

(i) Membership

: Membership growth in both Corporate and Non-Corporate categories during the year 1994-95 compares favourably with the corresponding figures for the preceding year. Efforts are on in various directions to encourage younger generation of the profession to associate themselves with Institution.

(ii) Accrediation

: In accordance to the New Accreditation Policy of the Institution duly approved by the Council, a number of qualifications have been accepted during the year by the Council for exemption from the Institution Examinations.

The Equivalence Committee of the Institution assessed the qualifications of 147 candidates pending for equivalence.

● Advancement of Technology and Engineering

As the Co-ordinating Committee of important Technical activities of the Institution, the Committee for Advancement and Technology Engineering (CATE) met four times during the year to monitor various national and international activities planned by the Divisions and to consider proposals for promotion of R&D, strengthening engineering information services centre and other development activities, taking into account the prevailing attitude of the country and to employ scientific and technological expertise to the best advantage for the development of the country.

● Promotion of R&D

: While in the process of implementation of its decision to hold an inter-disciplinary workshop to facility R&D activities of the Institution, different *fora*, had been engaged in the development of Rural Technology, Management of Water Resources, and encouragement of Design and Research and conduct of Continuing Education Courses through Engineering Staff College of India, Hyderabad. The report of these peripheral bodies established by the Institution for specific purposes are summarized as under:-

(i) Rural Development Forum : In an effort to demonstrate Solar Pump and Solar Equipment to be used in Rural Areas, an One Day Workshop cum Exhibition on Rural Energy was held on March 18, 1995 at the Village Rautara in the District of North 24 Parganas, West Bengal, inaugurated by Shri Saral Dev, Minister-in-Charge, cooperatin Department, Government of West Bengal. The programme evoked keen interest amongst the villagers and attended by nearly 300 participants.

(ii) Water Management Forum : Since its establishment in August 1986, the Water Management Forum of the Institution of Engineers has been conducting activities for developing consciousness for economic and cost effective water management in the areas of agriculture as well as water supply sectors. During the year, the forum was involved actively in the following activities:

- Celebration on 'Water Resources Day' in Gujarat and in Assam.
- Workshop on 'Irrigation network in high rainfall areas' at Jarhat on May 30-31, 1994.
- Workshop on 'Rain Water Harvest Techniques' at Tejpur, June 2-3, 1994.
- Training Courses on 'Environmental Impact of Water Resources Development' at Tejpur on October 19—26, 1994.

(iii) National Design and Research Forum

National Design Award, Architectural Design Award, Environmental Engineering Design Award and Suman Sharma Award on the recommendation of NDRF were given away during Engineering Congress.

The twenty fifth All India Student Design Competiton was conducted and 19 prizes were awarded.

Dr. S.P. Luthra Award was also instituted during the year. An Engineering Design Journal on 'Design for Quietness' and a Monograph on Tribology was brought out during the year.

Illuminating talk on 'creativity in design' by Hari Paramaswara, and a talk on 'Bangalore Urban Environment Project' by Dr. Raj

Murthy followed by presentation of slides by Mr Sven Ernedai and Mr. Hakan Torwevik of Sweden was delivered.

NDRF had also organised Workshop on ILSO 9000 and was associated with national Conference on Project Design, and Workshop on Integration of Education Research and Industry for National growth.

(iv) Engineering Staff College of India, Hyderabad:

Engineering Staff College of India (ESCI) conducted a large number of Continuing Education courses and Career Enrichment and Executive Development Programmes and Workshops on a wide variety of topics, such as, Management of transportation System by 2000 AD, National Water Management Project, Design of Irrigation Works, Remote Sensing Techniques and Applications etc.

Number of sponsored programmes drawn up by Andhra Pradesh Electricity Board, Tamilnadu Electricity Board, Power Finance Corporation, National Mineral Development Corporation (NMDC), Department of Science and Technology, to name a few, were also undertaken.

Another important area of involvement of the College was the conduct of second lead assessor Course on ISO 9000 quality systems. Engineering Staff College of India (ESCI) in collaboration with Jawaharlal Nehru Technological University (JNTU) conducted a three Semester P.G. Diploma Course in Software Engineering and number of programmes on computer Studies and Applications during the period.

● Engineering Information Service Centre:

The most beneficial accomplishment of the past year was the automation project of the Library entered upon as recommended earlier.

The project had been undertaken as part of a bigger project of

development of Metropolical Area Network (MAN) in Calcutta name CALIBNET. The MANS current under development could be linked across the country. Ultimately such network would produce Open Public Access Catalogue (OPAC) system.

All major items ordered for were supplied by CMC the organisation which was entrusted with the implementation of entire CALIBNET Project sponsored by NISSAT.

Training in system use also has been provided to the staff. The most important LANDMARK in the history of the Library turned to an Information Centre now was thus established during the year.

● Awards and Prizes

: To encourage technological research and development following awards were given away during the Ninth Indian Engineering Congress National Design Award to Dr. P.K. Patwardhan, Architectural Engineering Award to Shri P.P. Dharwardkar and Suman Sharma Award to Ms P. Bala for their outstanding contribution in the respective fields. As many as thirty one prizes were awarded to authors contributing technical papers on their research and development activities, published in the Institution publications.

● Publication

: Selected Research and Project Report and Cases Studies in all the fields of engineering and technology has been published in the Institution Journal in conformity with the scheme of publications set by the Council. The IEI News and the Technorama, two prestigious colourful publications containing report of major technical activities held at national and international level and the text of invited lectures from eminent engineering personality along with other attractive features has been published and transmitted to members, subscribers and decision makers.

● Technical Activities

: Certain events bearing special significance observed during the

year were: Platinum Jubilee Celebration. The Ninth Indian Engineering Congress, Water Resources Day, World Environment Day, World Telecommunication Day, World Habitat Day, Engineers' Day at all its Centres and reports published in the IEI News.

● Major international technical activities involved

(i) International Conference on 'Energy for Tomorrow's World: Concerns and Issues of Developing Countries'

(ii) International Workshop 'Mining in the Changing Worlds Scenario' attended by nearly 75 participants including foreign delegates from Australia and UK, and Workshop was organized under the auspices of Indian National Committee of World Mining Congress (WMC).

(iii) Meeting of the Working Group on 'Economic Instruments of the World Energy Council'

(iv) National Conventions of Divisions held between 01.4.94 to 31.03.95. Aiming at the achievement of technical and professional growth through intensive technical content and mutual interactions.

(v) Other Major Technical Activities at Centres are that the States and Local Centres of the Institution organized technical activities like Invited Lectures/ Round Table/Conferences/Seminar etc.

● Education and Examination :

(i) Revision of Syllabus

: A new syllabus was worked out by a sub-committee of EEAC and the revised structure of the syllabi was forwarded to the Ministry of Human Resources Development. The Ministry has approved the new syllabus, for its implementation.

(ii) Distance Learning Programme : For strengthening the non-formal Education Programme actions like preparation of text books and extending supporting services to the students and Technicians' Members on selected areas, has been initiated.

(iii) Examination

: On the recommendation of EEA Committee, the Council took disciplinary action against 62 candidates for Winter 1993 examination and 108 candidates for Summer 1994 Exam.

● **IEI Convocation with Second Technicians and Students' Convention:**

The 2nd IEI Convocation and the Technicians' & Students' Convention was held at Pune on September 22-23, 1994 where his excellency Dr. J.C. Alexander, governor of Maharashtra graced the occasions as Chief Guest. In his address, Dr. Alexander complimented the IEI for its pioneering role in the non-formal education in the country. According to him the solution to the present pressing problem of higher education in the country was to lay more emphasis on non-formal education.

At the Technicians and Student Convention Shri H.K. Firodia, distinguished industrialist and past Chairman of the Pune Local Centre of IEI was the Chief Guest. Shri Firodia gave an inspiring speech highlighting the vast scope being opened up due to economic liberalization and called upon budding engineers to attempt seriously to establish small scale units to become self-reliant.

(ii) Technicians' and Students' Chapters:

In its endeavour for the development of a close association between Engineering Colleges and Polytechnics, the Institution had taken steps to encourage Students of such segments to join their fraternity in order to develop them into future professional engineers. IEI's effort in this direction has resulted in functioning of 44 Technician Chapters, 121 Engineering College Students' Chapters and 169 Polytechnic Students' Chapters during the year 1994-95.

As a step towards greater involvement of Engineering College and Polytechnic Students in the activities of IEI, actions were initiated during the year for better

interaction of Students' Chapter with the Centres of IEI by way of more technical activities.

● International Inter action

: The Institutional International linkages both multilateral and bi-lateral levels had been very effectively maintained during the year under review. The Institution continued its activities as, Indian Member Committee of World Energy Council (IMC-WEC), Indian National committee of Federation Internationale de la Precontrainte (INC-FIP), Member, Federation of Engineering Institutions of South & Central Asia (FFISCA) and as the national Institution having bi-lateral agreements with several sister organisations of overseas countries based on reciprocal relationships.

Name of Senior Researchers

- Dr. P.K. Patwardhan,
- Dr. P.P. Dharwadkar,
- Mrs. P. Bala

THE MEHTA RESEARCH INSTITUTE OF MATHEMATICS AND MATHEMATICAL PHYSICS

Address

10, Kasturba Gandhi Marg,
(Old Kutchery Road),
Allahabad-211 002.

Background

Status of the SIRO : Society, Aided Institution of the DAE Govt. of India.

Year of establishment : 1975

Major objectives : To carry our research in Mathematics Theoretical Physica, Computer Sc. & related Topics.

Major research areas : Mathematics-Pure Mathematics Algebra coding Theory, Combinatorics Number Theory, Operator Theory, Representation Theory, Summability Theory & Topology.

Physics-Theoretical High Energy Physics, Theoretical Astrophysics, Condensed matter Physics and Mathematical Physics.

Initial recognition as SIRO : 1975

Income and R & D expenditure:

	<i>(Rs. in lakhs)</i>		
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations received	Nil	Nil	Nil
Grants received	3.90	4.23	5.30
Other income	13.86	23.35	12.42
<i>Expenditure on R & D</i>	10.69	18.09	1.86
• Capital:	11.36	36.70	258.50
• Recurring:	176.40	210.00	84.93

Infrastructural facilities:

Land & Building : Area : 66 acres/Land given by U.P. Govt. and Permanent Campus is being Built by DAE.

Equipment facilities : Gross value : Rs. 50.00 lakhs

List of sophisticated equipment :

- Sun Sparc Machine
- IBM (39H & 25 T)
- PCs (286/386/486)
- Printers
- Modem
- VSAT equipments
- Fax
- Xerox Machine
- Electronic Typewriters etc.

R & D Manpower:

Library facilities : The Library has subscribed to 159 scientific journals in Mathematics and Physics). About one thousand books and many back volumes of journals have

been procured. The process of acquiring back volumes is still in progress.

Library Automation

: Keeping pace with the time, the MRI Library is also being automated. The software for the library has been developed in a tailor-made fashion.

Major achievements claimed:

(i) *Research Activities in Mathematics:*

Active research in several areas of Pure Mathematics is being pursued. Algebra, Algebraic Geometry, Coding theory, Combinatorics, Algebraic and Analytic Number theory and Modular Forms, Operator Theory, Representation Theory of Real and P-adic Groups and Automorphic Forms, Summability Theory and Topology are the major areas of current interest.

(ii) *Research activities in Theoretical Physics:*

Theoretical High Energy Physics: String theory, Quantum gravity, Black Holes, Cosmology, Quantum Chromodynamics, Lattice gauge theory, formal aspects of quantum field theory, particle physics phenomenology-standard model, technicolor, neutrino Physics etc.

Theoretical Astro Physics: Large Scale Structure of the Universe and Early Universe.

Condensed Matter Physics: Strongly correlated electrons, Mott transition, superconductivity, quantum Hall effect, disordered interacting bosons, quantum spin systems and anyons.

Mathematical Physics: Integrable models.

(iii) *Summer School:*

A ten day summer school on supersymmetry was organised on a small scale at Srinagar, Garhwal in collaboration with the Hemwati nandan Bahuguna University, there. It was attended by scholars from the Institute, Hemwati Nandan Bahuguna University and Delhi University.

(iv) *M. Phil. and Ph. D. programme:*

Training potential candidate in mathematics and theoretical Physics is one of the main goals of the Institute. A fresh batch of students is selected every year in Physics and Mathematics, the session beginning in August. The students have to take lecture courses in core subjects and several advanced level courses and after successful completion have to undergo guided research for their Ph.D. Degree. From the year 1993-94, a collaboration programme has been started with Birla Institute of Technology and Science, Pilani, which will award M. Phil. and subsequently Ph.D. degree to successful candidates. Also a parallel programme exists with HNB Garhwal University at Shrinagar which will award Ph.D. degree to successful candidate. During this programme students are paid a stipend of Rs. 2500/- pm for the first two year and Rs. 2800/- pm after that along with some book grant. Those not availing of Hostel facility are paid HRA of Rs. 450/- pm.

Name of Senior Researchers

- Prof. H.S. Mani
- Prof. D. Prasad
- Dr. Raj Gandhi
- Dr. Sumathi Rao

THE MINING, GEOLOGICAL AND METALLURGICAL INSTITUTE OF INDIA

Address

29, Chowringhee Road,
Calcutta-700 016.

Background

Status of the SIRO : Association

Year of establishment : 1906

- Major objectives :
- i) To advance and protect the interests of the mineral and meta industries and the welfare of those engaged therein and to assist maintaining just and honourable practice in the professions of Geology, Mining, Metallurgy and allied subjects connected with the mineral industry of the country.
 - ii) To encourage, assist and extend knowledge and information connected with geology, metallurgy etc. whether by establishment and promotion of lectures, discussion, or correspondence, by holding conferences, by formation of libraries, by the publication of newspapers, periodicals, books, maps or by the endowment of professorship, or scholarship or by encouraging research work of howsoever otherwise.

Major research areas : Mining & Geology

Initial recognition by DSIR : 1993

Income and R & D expenditure

		(Rs. in lakhs)		
Income	1992-93	1993-94	1994-95	
Donations Received	\$0.10	—	—	
	(Canadian dollars)			
Grants Received	0.64	1.84	0.14	
Other Income	Nil	Nil	Nil	
Expenditure on R & D				
● Capital	0.11	—	—	
● Recurring	1.44	1.53	1.63	

Infrastructural facilities

Land : Value : Rs. 60 lakhs — approx
Area : Rs. 10.5 cottah

Building : Under construction

Equipment facilities : Gross Value : Rs. 2.65 lakh — approx

List of sophisticated equipment :

- Radon monitor
- Seismograph with surface and downward interface and field computer
- Vertical and horizontal geophones
- Cross hole shear wave hammer
- Seismic gun

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical	Post Graduates	— 2	1 —
Library facilities	: MGMI & Geological Survey of India Libraries.		
● Research papers/Reports published	: Papers published in Transactions and by special volumes.		
● Seminars/Conferences attended/organised	:		
i)	Seminar on "Mine Productivity and Technology" at Calcutta.		
ii)	Convention on "Mechanisation for Profit in Mining" at Bangalore.		
iii)	Seminar on "Maintenance Management for improved availability of Mining Machinery at Calcutta.		
● Any other	: Research and establishing an integrated geophysical methodology to enable locality underground uncharted workings in Raniganj Coalfields is nearing completion. Microgravity, gravity gradient, georadar, seismic reflection electrical tomography and seismic borehole tomography methods have been applied. There was about 70% success in locality in the underground galleries. This should enable adopting proper methodologies to stabilise these unknown workings which pose serious environmental and mining hazards.		

Name and Designation of Senior Researchers

- Shri N. Sen Technical Coordinator
- Shri O.P. Mishra Jr. Scientific Officer
- Shri S. Chakravorty Jr. Scientific Officer

THE MOTHER'S INSTITUTE OF RESEARCH

Address

C-141, Preet Vihar,
Delhi-110 092.

Background :

Name of the SIRO

: The Mother's Institute of Research is a Trust, established on the 5th February 1977.

Major objectives

: Research in the Works of Sri Aurobindo and Mother which relate to the problems of scientific knowledge, theory of evolution with special reference to the problems of scientific knowledge and mutation of species and interrelationship between Matter, Life and Mind as also their connection with the Supermind and manifestation of the Supermind in the field of Matter.

Major research areas

: Study of original manuscripts and recorded tapes on which Mother's own experiments in regard to problems of mutation of human species have been described; study of 30 volumes of Sri Aurobindo's Works; 13 Volumes of Mother's Agenda and 17 other Volumes of Mother's Works; the problem of sound and the effects of sound and music on various problems of health and healing; the problem of science and values and their implications for education; Yoga as science; relevance of yogic knowledge to the problem of contemporary crisis of India and the world; history of Indian science, philosophy and culture.

Income and R & D expenditure

		(Rs. in lakhs)		
<i>Income</i>		1992-93	1993-94	1994-95
Grant received	:	5.00	Nil	Nil
Donations	:	0.45	0.12	1.08
Other Income	:	1.09	0.07	0.11
<i>Expenditure on R&D</i>				
• Capital	:	Nil	Nil	Nil
• Recurring	:	4.33	3.40	2.46

Infrastructural facilities :

Land & Building

: Area: One acre of land
One building
Value: Rs. One lakh
(about 15 years ago)

List of equipments

: Equipment facilities include a computer, printer, Photo-copying machines and five electronic typewriters.

Library facilities

: The Library consisting of 5000 volumes; value of which may be of the order of Rs. Five Lakhs.

R & D Manpower

: 8 (Scientific & Technical)

- Major achievements claimed:**
- i) The Institute has continued its research work connected with the study of the Mother's Agenda. The Director of the Institute wrote a momentous book entitled, "Evolution II" and this was published with the help of the Institute of the Evolutionary Research, Paris, both in French and English. A great deal of research was conducted to prepare the manuscript of the fourth volume of Mother's Chronicles, which is now ready for publication. The translation in Hindi of Volume III of Mother's Agenda has been prepared, and it is now in the final stages of publication. A good deal of research was done in the Works of Sri Aurobindo on the subject of Science and Yoga; they can give help to India's regeneration at the present critical juncture. The result was the publication of a book entitled, "India's Rebirth".
 - ii) A Workshop was held at Delhi from 1st May to 10th May, 1993 during which experts discussed various systems of medicine, both Eastern and Western, with a special focus on the potentiality of the human body and the powers of the supermind to transform the human body. Questions regarding nutrition and diet were also discussed. Aesthetics of the bodily perfection were also discussed. A manuscript of 500 pages has now been prepared under the title "The Mystery and Excellence of the Human Body", which will be published in the near future.
 - iii) The Institute also collaborated with the Indian Council of Philosophical Research, Particularly with its Project of History of India Science, Philosophy and Indian Culture. The Institute contributed two important papers towards this Project on the subject of the Yoga and the Veda and on Yoga as Science.
 - iv) The Institute also collaborated with the Sardar Patel University and with the Gujarat Vidyapith, Ahmedabad in exploring the problems of science, society and the contemporary crisis. Two important papers were contributed for furtherance of this collaboration.

- v) Volume VIII of Mother's Agenda was translated from original in French into English. Volume IX is under process of translation.
- vi) Efforts are being made to translate Mother's Agenda into Gujarati, Bengali and Tamil. First Volume of Mother's Agenda has been translated from French into Oriya, and second Volume is under process of translation. Their Director's books: "Adventure of Consciousness", "The Divine Materialism" and "Towards Supermanhood" have been translated into Marathi, and the manuscripts are being vetted by experts.
- vii) A new edition of "Sri Aurobindo and the Mother" written by Kireet Joshi is now in the press. A document on "Sound, Music and Healing" has been prepared with the help of a number of scholars, Indian and Westerners.

Name and Designation of Senior Researchers:

- Shri Satprem, Director
- Ms. Sujata Nahar, Deputy Director
- Mr. Michel Danino, Senior Researcher
- Ms. Nicole, Senior Researcher
- Mr. Patrice Marrot, Senior Researcher
- Ms. Rose, Senior Researcher

THE SOUTH INDIA TEXTILE RESEARCH ASSOCIATION

Address
Post Box No. 3205,
Bengaluru Aerodrome Post
Bengaluru-641014.

Income and R & D expenditure

		(Rs. in lakhs)		
		1992-93	1993-94	1994-95
Income				
Donations received	:	Nil	Nil	Nil
Grants received	:	266.01	347.48	285.84
Other Income	:	110.55	120.14	136.34
Expenditure on R&D				
● Capital	:	48.54	220.25	307.70
● Recurring	:	185.50	219.36	231.53

Infrastructural facilities

	Value:
Land & Building	: Land 28.84 Acres; Building 3.67 Acres
Equipment facilities	: Gross Value : Rs. 673.50 Lakhs (Includes equipment received under UNDP sponsored Project)

List of Sophisticated equipment : Various sections like Pilot textile mill, knitting & Textiles are well equipped with sophisticated facilities.

R & D Manpower:

Officers	:	49
Services:		
Scientific/Technical Assistants	:	68
Administrative Staff	:	13
Project Staff	:	16
Skilled/Semi Skilled and Maintenance Services	:	62

Major achievement claimed:

i) Decentralised Sector

- First to establish Powerloom Service Centres (1975) operating at present, in all 13 Centres, 9 fully funded by Ministry of Textiles.
- More than 25 major studies relating to Handlooms on Quality, Productivity, Cost, Diversification, Marketing and Exports.
- First to set up a Knitwear Training Centre, fully funded by Apparel Export Promotion Council (APEC); centre operating at Tirupur to assist hosiery exports. In appreciation of SITRA's work on Knitting, a Special Feature "Knitting cotton into Gold-An Indian Fable of Prosperity Comes True" was published by UNIDO.

ii) Product Development

- Break-through in the production of yarns from pineapple leaf fibre on bulk scale in cotton spinning system developed from pina fibre and blends.
- Energy saving coated-spindle tapes, siliconised silk suture thread and hygiene finishing of textiles which can find numerous applications in hospitals, hotels and homes; all the 3 developments commercialised.

iii) *Machinery Development and Instrumentation*

- Developed a commercial model of full-fledged machine-SITRA's Two-for-one Twister. Over 1200 machines sold so far.
- Five other major machinery developments commercialised: Kapas Purifier, High Speed Reel, High Production Decorticator and Non-Linear Cam and Positive Feed for Knitting.
- Fabricated and licensed over 25 testing instruments: Fibre Strength Tester, Trash Separator, Electronic Lea Strength Tester, Twist Tester, Hairiness Meter, Acid Treatment Plant, etc. A few instruments exported.

iv) *Process Control*

- Measures to judge spinning performance, expressions to predict yarn U% and lea CSP from fibre properties in cotton and man-made fibres. Modernisation concepts, Priorities, Mathematical expressions to break even, Planning and evaluation.

v) *Productivity*

- Comprehensive analysis presented in SITRA's Productivity Surveys (including the effect on cost); largest participation — 280 mills in the latest 24th survey.
- SITRA member mills record almost the highest spindle utilisation in the world and labour productivity and production rates in the country.
- Productivity increase in SITRA member mills, far above other regions: overall 250% over the past 32 years.
- Productivity report-generating computer software with built in decision-making procedures: the first known attempt of its kind in our country.

vi) *Cost Control*

- SITRA has laid down and quantified 5 main symptoms to forewarn sickness in spinning mills: specified working conditions to revive sick mills and run them profitably.

vii) *Training*

- International recognition for textile management training: 691 foreign nationals from 32 countries availed themselves of this training under various Government of India and other aided programmes.
- SITRA's Management Development Programme used as medium for dissemination of knowledge, transfer of technology and know-how: 10 to 12 kinds of programmes every year and one programme every 10 days. Over 12,000 trained so far.
- Labour Research and Training Centre started in 1982: the first of its kind in India, 16,650 workers trained besides 460 trainers.

viii) *Services*

- SITRA's services extensively utilised by mills: 85% of members avail every year one or more of the five services offered by SITRA.
- SITRA's help to member mills in valuation of machinery, staff recruitment, accessories testing and solution of operational problems.
- Energy conservation studies in over 90 mills including 10 co-operative mills. Mills report substantial savings of 10 to 15%.

ix) *General*

- Long-term basic research on fibre structure, friction and taper, orientation changes inside cotton fibres due to chemical finish and x-ray method of locating and dating of archaeological fibrous artifacts.

- SITRA's prominent role in framing of new textile policy and revision of conversion factors for assessing the per capita availability of cloth.
- From the consumer's point of view, over the past three decades the cost of cloth has not increased to the same extent as that of food, housing and various other consumable items. On the other hand, the quality of fabrics has improved very much and a wide range of textiles is available.

x) *Publication and Awards*

- Over 350 basic and applied research papers in reputed International and Indian journals: over 450 SITRA publications, 12 books and 40 patents.
- Overwhelming popularity of Productivity Norms publication of SITRA: Five editions totalling 22,000 copies.
- Recipient of a number of awards: Assocham Award (1), Indian Merchants Chamber Award (2), NRDC Awards (5), etc.

Name and Designation of five Senior Researchers

• Miss Indra Doraiswamy	Director
• Dr. S.S. Ramasamy	Assistant Director
• Shri K.P. Chellamani	Assistant Director
• Shri P. Muthukumaraswamy	Research Associate
• Shri S. Seshadri	Deputy Director

THE SUGAR TECHNOLOGIST'S ASSOCIATION OF INDIA

Address

21, Community Centre,
East of Kailash,
New Delhi-110 065.

Background

: The move to form a Technologists Association was initiated in the year 1925 by the late Mr. Noel Deerr, Dr. K.C. Banerji, Shri R.P. Sanghi, Shri R.C. Srivastava, Dr. J.H. Haldane, Shri V.P. Lyer and Mr. A. Brooks. Mr. Noel Deerr, was the founding father of the Association. He was also the first President and served the Association for over 10 years. The services rendered by Mr. Deerr to the sugar industry are remembered till date. The real credit for the orientation of the Association goes to Shri R.C. Srivastava, who brought it out of the rough weather to a sound footing. The traditions established by the above founders are till date being upheld by the new successors & office bearers.

Major objectives

- : i) To promote knowledge of the science and practice of sugar technology for persons following or studying for this profession.
- ii) To carry out or sponsor schemes of research relating to sugar industry and allied fields.
- iii) To grant certificate of competency in professional knowledge by issuing certificate for membership of the categories of Associates and Fellows.
- iv) To provide opportunities for exchange of knowledge amongst the members of the profession and their friends and to give facilities for reading papers and delivering of lectures on subjects of interest to the profession and for the acquisition and dissemination of information connected with and useful to the profession by holding scientific discourses, conventions, seminars or symposia and other means of information connected with and useful to the profession.
- v) To serve as an authoritative professional body on all matters pertaining to the profession of sugar technology.
- vi) To print, publish and circulate

papers, books, journals, magazines, periodicals and other technical and scientific literature and matters connected with the profession.

- vii) To look after the interest of the members of the Association, to bring about a standard of professional etiquette, to secure better employment conditions for them and to strive for general betterment of their knowledge.

Income and R & D expenditure

	(Rs. in lakhs)		
	1992-93	1993-94	1994-95
Income			
Donations Received	3.89	9.29	31.66
Grants Received	NIL	Nil	Nil
Other Income	9.38	8.54	11.82
Expenditure on R & D			
● Capital	—	1.69	1.11
● Recurring	18.00	18.27	44.05

Infrastructural facilities

R & D Manpower

- : The STAI has 7 renowned Sugar Technologists' in its R&D Committee. They work on part-time basis. At present, they are working on a new concept in drying of bagasse through "Humidification of Air & Use of Heat Pipes". A Maintenance Manual on Sugar Industry alongwith a book on Sugar Technology is also being prepared by the STAI.

Library facilities

- : Collection of over 3,000 books/proceedings/articles/journals/research papers, connected with Indian and Foreign industry/technology.

Major achievements claimed

Major achievements

- : (i) Association conducts seminars, workshops, conventions & prints proceedings of the above. It also organises a study trip every year to the overseas sugar factories/research institutes in order to study their technology, work approach, technological innovations, in order to implement them within our system. In the recent past, the trips organised were to Cuba, South Africa, Mexico and Sao Paulo. Besides this, it has ambitious plans of globalising the Indian Sugar Technology via. technology transfers with countries like Australia, Brazil, South Africa, France and Mauritius. A dialogue

has already been initiated with the above said countries and institutes. The STAI is the only affiliated association from India to the two world sugar bodies i.e. ISSCT (International Society of Sugar Cane Technologists) and ICUMSA (International Commission for Uniform Methods of Sugar Analysis).

- ii) The proud moment for the Indian Sugar Industry is the induction of the 26 Associate Referees to ICUMSA. This is for the first time that such a big number of experts have been included after a big vacuum despite Indian being the largest producer of the sugar in the world. The other breakthrough made by the STAI is, getting the nod from the ICUMSA Authorities for conducting the 2002 ICUMSA Conference in India. A Committee has also been constituted to look after the interests of the Indian Sugar Industry in the international scenario.
- iii) In Nov.-Dec. 1994 the STAI successfully organised the prestigious ISSCT Workshop at Pune. This was after a gap of nearly 38 years, that any ISSCT venture and taken place in India. The workshop received an overwhelming response from both the Indian/Foreign delegates. Renowned sugar technologists both from India and overseas deliberated in the workshop, in front of a receptive audience throughout the Workshop. The STAI is also bidding this year for the 1998 ISSCT Congress in India.
- iv) STAI organises 4 seminars and one annual convention on topics related with the problems of the industry every year in different parts of the country and print proceedings of the same. Recently the seminars conducted by it were :
 - Recent Development in Milling - Dec.'93
 - Water Management - March'94
 - Efficient Production & Utilisation of Steam in Sugar Factories - April'94

- STAI & DSTA Joint Convention - Sept.'94
- ISSCT Workshop - Nov.-Dec.'94
- Seminar on Process Options for Production of Sugar with Special Emphasis on Juice & Melt Clarification - April'95.

Seminars to be Conducted are:

- Production of Quality Raw Sugar
- Reduction in the cost of production of sugar
- Automation
- Sugarcane Management on Salt Affected Soil

- v) From this year, STAI Council has decided to award Annually Efficiency/Productivity prizes on all India basis to its Companion Member factories. A endeavour has been made to have closer proximity with the members, in order to bring a healthy competition & augment the productivity/efficiency in the factories.

The STAI awards annually to its member Noel Deerr Gold Medal and Sugar Industry Cup for the distinguished work done by them in the segments such as Agriculture, Engineering & Chemical Engg., Manufacturing, General and By-Products.

The STAI in last Annual Convention published over 100 research papers. STAI bring out 4 Annual Publications & 7 other publications on Sugar Technology.

Name of Senior Researchers

- Mr. H.N. Gupta
- Dr. K.R. Perumal
- Dr. A.P. Gupta
- Dr. N.A. Ramaiah
- Mr. N.S. Jain

TRUST FOR FUNDAMENTAL RESEARCH IN SPACE DYNAMICS AND CELESTIAL MECHANICS

Address

6/277, Nirankari Colony,
New Delhi-110 009.

Background

Status of the SIRO

Major objectives

- : Institution under registered Trust.
- : To promote, advance and encourage research in space dynamics and Celestial Mechanics including the practical applications. To make the general public aware of the importance of Space Dynamics and Celestial Mechanics by organising summer schools, shortterm courses and lectures by eminent Scientists.

Initial designation by DSIR

: March, 1994.

Income and R & D expenditure:

Income	1992-93	1993-94	(Rs. in lakh) 1994-95
Donations Received	Nil	Nil	0.3
Grants Received	Nil	Nil	N
Expenditure on R&D			
• Capital	1.94	Nil	N
• Recurring	1.58	1.29	79.8

Infrastructural facilities:

Land & Building
(Rented Building)

: Area: 1000 sq. ft.

Rent: Rs. 3,000/- p.m.

Equipment facilities

: Gross value: Rs. 5.00 lakhs

R & D Manpower:

	Qualification	Full Time	Part Time
Scientific & Technical	Doctorates	1	6
	Post graduate	2	5

Library facilities

: Books—800;
Reprints—2000;
Journals—8.

Major achievements claimed:

- Technologies developed and transferred for upscaling/commercialisation :
 - Soft-ware developed for:
 - (i) solving Algebraical equations
 - (ii) solving differential equations
 - (iii) cataloging of library books & journals
 - (iv) cataloging of addresses (both National & International Scientists of our field)
- Technologies developed and ready for upscaling :
 - (i) For developing Poincare-section
 - (ii) For calculating Lyapunov Characteristic Exponent
 - (iii) For sub-harmonic spectrum
 - (iv) For reversing an orbit.
- New Technic/methodologies developed and implemented :
 - Soft-ware developed for solving Non-linear Differential equation.

- Research papers/Reports : 16
Published
- Seminars/Conferences : (i) 2 International Conferences
attended/organised organised
(ii) Attended 6
(iii) Seminars: large number of seminars
organised.

Name and Designation of Senior Researchers:

- Dr. K. B. Bhatnagar, Director (CFRSC)
- Dr. P. P. Hallan, Reader, Zakir Husain College, Delhi.
- Dr. L. M. Saha, Reader, Zakir Husain College, Delhi.
- Dr. Usha Gupta, Reader, Dayal Singh College, Delhi.
- Dr. Beena Gupta, Reader, Laxmibai College, Delhi.

USHA SCIENTIFIC RESEARCH INSTITUTE

Address

14, Princep Street,
Calcutta-700 072.

Background

Status of the SIRO : Research & Development of new products & processes, and design machineries in the sector of steel wire ropes, alloy steels & related field

Year of initial recognition : 1975

Income and R & D expenditure

		(Rs. in lakhs)	
	1992-93	1993-94	1994-95
Income			
Donation received	62.00	10.00	
Grant received	Nil	Nil	
Expenditure on R & D			
● Capital	2.68	2.91	0.1
● Recurring	14.00	20.38	20.8

Infrastructural facilities

Land and Building : Area-12 acres;
Value-Rs. 13.25 lakhs.

Equipment facilities : Gross Value- Rs. 18 Lakhs.

List of sophisticated equipments

- Incident Light Camera Microscope, Neophoti-21.
- Fatigue testing machine.
- Magnetic Permeability meter
- submerged sample cutting machine.
- Heat treatment furnace.

R & D Manpower

	Qualification	Full time	Part time
Science & Technical	Doctorate	1	-
	Post Graduate	3	2
	Graduate	7	1

Library facilities : 500 books.

Major achievements claimed

- Technologies developed & transferred for upscaling/commercialisation
 - (i) In the wire patenting field, the organisation has switched over from old lead patenting to the modern high speed fluidised bed patenting technology for wires of 1.5 to 2.15 mm diameter.
The new fluidised bed patenting plant has been set into operation after a thorough R & D work conducted through the technique of design of experiments for establishing the various wire patenting parameters vis-a-vis the stringent wire quality necessary for drawing them to desired high tensile roping wire. The plant is presently yielding 30-40MT of black and galvanised patenting wire every day against earlier production of 20MT/day with the old methods. This is yielding approx. Rs. 100 lakhs contribution extra per month to the industry.
 - (ii) High Carbon steel wire for the manufacture of Hository needles has been developed and presently 10 to 15 MT per month is being marketed to various parties around Ludhiana & Chandigarh.

- The product has become highly successful at the customers end which earlier used to be fully imported for the extreme perfection of quality needed for this class of product.
- Technologies developed and ready for upscaling

(i) Manufacturing technology for the wire for Surgical Needles has been developed out of martensitic grade stainless steel using fully indigenous material. The trial lot has been satisfactorily tried out at the customers end. Presently the process technology is ready for commercialisation.

This is an import substitution item.

(ii) Profiled spring wire of Silco Manganese steel having trapezoidal cross section is conventionally cold rolled to impart the profile. Suitable process technology has been developed to draw these wires having dimensions like 10x9.90x6mm because drawing is a more economical process through which a production level of 100 MT per month can be achieved against earlier production level of 40MT/month only at UMIL.

This process technology has been tried for initial trial lots and have behaved satisfactorily at the spring manufacturers end and is now ready for implementation.

New Techniques/methodologies developed and implemented

- New gas wiping technique has been developed and implemented in one of the wire patenting/galvanising lines in the organisation.

This technique is helping in producing patented and hot-dip galvanised wire at a high speed i.e. almost at a speed double the normal speed.

- Research papers published : 2
- Seminars/conferences attended : 9

Name and Designation of five Senior Researchers

- Dr. A. Biswas, Director
- Mr. A.K. Roy, Vice President
- Mr. A.K. Bhattacharjee, Jt. Director
- Mr. D.N. Mukherjee, Sr. Manager (Development)
- Mr. Kaushik Laha, Research Engineer



Fatigue Testing Machine

VASANT DADA SUGAR INSTITUTE

Address:

Manjari (BK), Tal. Haveli
Distt. Pune
Maharashtra-412 307

Background

Status of the SIRO	: Institution
Year of establishment	: 1975
Major objectives	: Research, Training and Development & Extension Services.
Major research areas	: Sugarcane, Sugar and allied industries
Initial recognition	: April, 1977

Income and R & D expenditure

Income	1992-93	(Rs. in lakhs)	
		1993-94	1994-95 (Provisional)
Donation/contribution:			
Received	161.53	250.06	398.4
Grants Received:	—	—	300.0
Other Income:	224.10	233.47	273.5
Expenditure on R&D			
• Capital:	98.90	70.90	112.4
• Recurring:	243.73	265.60	274.2

Infrastructural facilities

Land and Building	: Area : 518 Acres Value : Rs. 583.61 lakhs
Equipment Facilities	: Gross Value: Rs. 588.49 lakhs

List of sophisticated equipment

- Portable Photosynthesis System
- UV/Visible Spectrophotometer
- ICP Spectrophotometer
- High Performance Liquid chromatography
- Gas Liquid Chromatography
- Automatic Polarimeter
- Chemap Fermenter

R & D Manpower

	Qualification	Full time	Part time
Scientific and Technical	Doctorates	18	1
	Post Graduates	25	—
	Graduates	33	—

Library facilities

: Total No. of collections 13472 and 185 periodicals are available for reference alert services and reprographic services. It acts as a centre for information for Sugarcane, Sugar and allied industries.

Major achievements claimed

- Technologies developed and transferred for upscaling/commercialisation. :
 - i) Treatment of Distillery Effluents by Drying, Inceneration and Energy Generation technique (DIEG-VSI Process).
 - ii) Effect of slurry grain size on molasses exhaustion.
 - iii) Drip Irrigation System
 - iv) Mechanical Sugarcane Harvester
 - v) Vermicompost from farm and sugar factory waste.
- Technologies developed and ready for upscaling :
 - i) Micropropagation of Sugarcane Varieties.
 - ii) Automatic Drip Irrigation for sugarcane and intercrops.
 - iii) Sucrose esters of fatty acids production and application in preservation of perishable fruits and vegetables.
 - iv) Turkey Red Oil from Castor Oil.
 - v) Crabonisation of Sugarcane trash by continuous drum carbonizer.
 - vi) Automatic equipment for bagasse moisture measurement.
- New techniques/ methodologies developed and implemented :
 - i) Syrup clarification by Phosfloatation technique.
 - ii) Energy auditing in sugar industry by providing central facility of Energy Van.
- Patent filed : 2
- Research Papers/Reports published : 283
- Seminars/Conferences attended/organised: 176
- Awards won:
 - i) Dr. Shirgaonkar Memorial Award for presenting best technical paper in DSTA Convention for last four years continuously.
 - ii) Received 2nd Prize in DSTA Convention, 94 for the paper "Microprocessor based automatic drip irrigation system in sugarcane".
 - iii) Maharashtra Government 1st Prize for participating in International Agricultural Exhibition held in New Delhi in July 1994.
- Any others : Rendering technical advice to sugar factories to improve technical performance and to reduce process losses.

Name and Designation of five Senior Researchers

- Dr. G.N. Acharya, Emeritus Professor
- Dr. S.B. Jadhav, Head, Agril.Sci.& Tech.
- Dr. S.P. Phadnis, I/c. Head, Sugar Chemistry
- Shri A.A. Zende, Chief Sugar Technologist and head, Sugar Tech.
- Shri V.G., I/c. Chief Sugar Chikhalikar Engineer & Head, Sugar Engg.



Sugarcane Harvester

ASTU-SHILPA FOUNDATION FOR STUDIES AND RESEARCH IN ENVIRONMENTAL DESIGN

Tech.
Sugar

Address
Sangath, Thaltej Road,
Ahmedabad-380 054.

Background

Status of the SIRO Institute

Year of establishment 1978

Major objectives:

- (i) To carry out research in existing settlements in terms of ecological, economic and social system;
- (ii) To develop relevant norms for developmental aspects of human habitat;
- (iii) To analyse and document regional characteristics of habitat;
- (iv) To develop techniques and frame policy for resource and energy conservation in human habitat;
- (v) To carry out research in building materials and techniques of construction and to develop appropriate design, models and prototype of various elements;
- (vi) To experiment and build live projects with emphasis on user participation;
- (vii) To develop and provide multi-disciplinary professional expertise to carry out study of environmental problems in an integrated manner;
- (viii) To promote and spread knowledge acquired by study and research, through publication, exhibitions; lectures; seminars, workshops, etc;

Major research areas:

- (i) Human settlements;
- (ii) Urban Housing;
- (iii) Design Economics;
- (iv) Norms of Planning;
- (v) Appropriate technology;

Initial recognition as SIRO : 1978

Income and R & D expenditure

		(Rs. in lakhs)		
		1992-93	1993-94	1994-95
Income	:			
Donations Received	:	30.00	10.25	25.00
Grants Received	:	3.44	3.20	16.04
Other Income	:	2.78	5.81	8.06
Expenditure on R&D	:			
• Capital	:	Nil	0.80	2.32
• Recurring	:	4.32	7.52	20.95

Infrastructural facilities

Land and Building : Rental
Equipment facilities : Gross Value: Rs. 5.00 Lakhs.

List of equipment

Computers with printer (IBM Compitable as well as Macintosh), audio-visual equipments (T.V., V.C.R., Slide Projector, Overhead Projector, Video Camera etc.)

R & D manpower:

	Qualification	(Rs. in lakhs)	
		Full time	Part time
Scientific & Technical	Architect/Planners/Engineers	7	15
Social Sciences and others	Graduates	1	2

Library facilities

Around 1000 titles (books, reports, magazines, etc.) Also selected audio and video packages.

Major achievements claimed:

- Technologies developed and transferred for upscaling/commercialisation.
 - (i) Development of low-cost emergency shelters for the project affected people of Sardar Sarovar Narmada Nigam Irrigation Projects.
 - (ii) Evolving innovative design strategies for cost effective planning and infrastructure and its implimentation at Aranya Low-cost Housing, Indore
- New Techniques/methodologies developed and implemented
 - (i) Preparation of a check-list manual for habitat design in Indian context at the scales of settlement, community and the dwelling.
 - (ii) Evolution of alternative building byelaws and development norms for city of Ahmedabad.
- Research papers/Reports published : 5
- Seminars/Conferences: attended/organized
 - Organized an International Studio and conducted by Prof. George Ansylvicius of University of New Mexico, USA
 - Organized an Open Forum "Built Environment; Directions for Today and Tomorrow" for professional seminars and also presented papers.
- Awards won
 - (i) Journal of the Indian Institute of Architects Special Award, 1992 for Study: Towards & Humane Habitat.
 - (ii) Journal of the Indian Institute of Architects Project Award 1991 for Housing: "Aranya" at Indore.
 - (iii) Journal of the Indian Institute of Architects Special Award 1990 for Study: Learning from Jaipur.

(iv) Progressive Architecture 38th Annual Award, 1990 (jointly with McGill University) for Research: How the Other Half Builds.

Name and Designation of five Senior Researchers:

- Mr. Balkrishna Doshi, Research Director
- Dr. Meera Mehta, Senior Research Fellow
- Mr. Muktirajsinhji Chauhan, Senior Research Fellow
- Mr. Yatin Pandya, Senior Research Fellow
- Mr. Utpal Sharma, Senior Research Fellow

VEDHSHALA (ASTRONOMICAL OBSERVATORY)

Address

Near Naranpura Rly. Crossing,
Naranpura,
Ahmedabad-380013.

Status of the SIRO : Institution

Income and R & D expenditure :

Income	1992-93	1993-94	(Rs. in lakhs)
			1994-95
Donation received	Nil	Nil	Nil
Grants received	—	1.27	2.25
Other income	Nil	Nil	Nil
Expenditure on R & D:			
• Capital	Nil	Nil	Nil
• Recurring	7.53	5.70	5.44

Infrastructural facilities

Land & Building : Value : Rs. 6.00 lakhs (1994-95)
Equipment facilities : Gross Value : Rs. 5.00 lakhs.

List of the sophisticated equipment

- Telescope
- Celestrone
- Computer
- Projector
- Films/Screen etc.
- Binoqular
- Parabolic Mirror

Library facilities : Special materials Manuscripts; 1094 Card System.

Major achievements claimed

Various projects worked on :

(i) Dept. of Ephemeris (Natural Almanac)

- | | |
|--|--|
| • Computation of advance of planetary positions. | • Preparation of advance astronomical ephemeris giving different co-ordinate of all the planets. |
| • Preparation of Indian Panchangs | • Preparation of Booklet of Astronomical Phenomene. |
| • Preparation of Festivals in advance. | • Publications - Festivals 1991-92-93. |

(ii) Lok-Shikshan Vibhag

- | | |
|--|---|
| • Small Astronomical museum planetarium, 6" refractor Telescope and Lectures, Films etc. | • Demonstration Telescope and astronomical museum etc. and Ambaji, Solar observatory. |
|--|---|

- Photography of celestial events using 8" celestrone telescope.
- Software preparation and summer school.

- Mobile unit for Lok-Shikshan and Solar Energy exhibition.

(iii) Dept. of Science and Technology in Indology (Ancient Astronomy)

- Collection & Cataloguing of old manuscripts.
- Critical editing of Samhita with Commentary.
- Translation in English Hindi and Gujarati of Critical edition of Vedanga Jyotish (in Sanskrit).
- Research work done on Bharitiya Khagol Shashtra.

- Creation of manuscript Library.
- To explore potential applications of Indian Astronomy.
- Tithipatak of Vedang Jyotish.

- Publication of Bhartiya Khagol Shastra Book Pages 285

(iv) Earth's Atmospheres Planetary Astronomy & Cometary Astronomy

- Ozone and climatology sub-weather relationship

- Cometary features including influence of distances in solar activity at various locations in the interplanetary space.

- SOLAR UV radiation

- Minor Constituents in middle Atmosphere (Fourier spectress copy).

- Aeovsol and Temperature profiles in 20—80 Kms.

- Ozone and Minor species using Microwave techniques.

(v) Ritu Vigyan (Crimatology):

- Compilation of Sholkas regarding Ritu Vigyan in Ancient Scripture and their translation and testing of the forecast based on them.
- Predications of weather forecast (climatology) well in Advance.

- To test these predications with available meteorological data.

- Publications of forecast every year.

(vi) Solar Energy

- Making of prototypes and models and designing, etc. of aircooling system.

- Work on wind-mills.

- Electric power generation etc.

(vii) Galactic Astronomy & Positional Astronomy

- Study of the effects of gravitational interaction between two colliding galaxies of different shapes.
- Study of orbits of Meteorites
- Determination of various conditions favourable for the formation of bridges and tails interacting galaxy systems.
- Study of Dynamical friction in colliding galaxies.



Celestron 8" Diameter

VIJNANA PARISHAD

Registered Address
Vijnana Parishad, Prayag
Maharshi Dayanand Marg,
Allahabad-211 003.

Background

- Status of the SIRO : Vijnana Parishad Prayag is a registered Science Society established in 1913.
- Major objectives:
- (i) Dissemination of scientific knowledge through the medium of Hindi.
 - (ii) Publication of research journal since 1958 in Hindi.
 - (iii) Organisation of National level & local level seminars/symposium in Hindi.
 - (iv) Organising lectures by environment scientists in Hindi in current scientific topics.

Income and R & D expenditure

		(Rs. in lakhs)		
Income	:	1992-93	1993-94	1994-95
• Donations Received	:	0.14	0.15	0.12
• Grants Received	:	0.20	Nil	0.30
• Other Income	:	Nil	Nil	Nil
Expenditure on R&D	:	0.43	0.22	0.45

Library facilities: A big library with over 5,000 copies of the science journals & books over 5000.

Major achievements claimed:

- Publication of popular monthly science magazine 'Vijnana' since 1915 regularly (over 80 years). Publication of Quarterly research journal Vijnana Parishad Anusandhan Patrika since 1958 (over 30 years).
- Research papers/Reports published. About 1000 research papers published in Anusandhan Patrika.
- Seminars/Conferences attended/organised. About 25
- Awards won: Dr. S.G. Misra Dr. Atma Ram award, Swami Satya Prakash award Sarasvati-Ved Vedan: Prof. R.C. Mehrotra—Dr. Atma Ram Award.
- Any other — Dr. Gorakh Prasad Prise, Dr. Ratna Kumari Gold Medal, Dr. Whittaker Prize.

Name and Designation of five Senior Researchers

- Prof. D.D. Nautiyal, Botany Deptt. Allahabad University
- Prof. H.P. Tiwari, Head of Chemistry Deptt.
- Prof. P.C. Gupta, Professor, of Chemistry Deptt.
- Dr. R.S.D. Dubey, Math Deptt.
- Dr. S.G. Misra, Ex Director, Sheila Dhar Institute, Allahabad University.

VITTAL MALLYA SCIENTIFIC RESEARCH FOUNDATION

Address

P.B. No. 406,
K.R. Road,
Bangalore-560 004.

Background

Status : Registered under Karnataka Societies Act of 1960.

Year of establishment : 1987

Major research areas : Biochemistry, Microbiology, Genetic Engineering, Nutrition, Toxicology, Biomedical, Food & flavour Chemistry, Material Sciences and Chemical Engineering.

Initial recognition as SIRO : 1987

Income and R & D expenditure

		(Rs. in lakhs)	
<i>Income</i>	1992-93	1993-94	1994-95
Donations Received (contributions only)	90.50	288.91	60.54
Grants received	1.10	27.50	16.80
Other income	0.20	19.92	31.08
<i>Expenditure on R & D</i>			
● Capital	6.96	13.25	25.78
● Recurring	84.40	106.38	99.70

Infrastructural facilities

Land & Building : Building has been hired.
Value: 29.11 lacs

Equipment facilities : Gross Value : Rs. 190.11 lakhs.

List of sophisticated equipment :

- Gas chromatograph mass spectrometer
- Automated fast protein LC system
- Ultrascan XL laser densitometer and Protein/DNA separating system.
- Biomolecule separation and analysis system.
- Gel permeation liquid chromatography system
- Ultra and high speed centrifuges
- Uv spectrometer
- Lab fermentor
- FT-IR spectrometer
- Digital polarimeter
- DNA Photographic system

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical	Doctrate &	8	
	Post Graduate	7	
Social Sciences & Others	Degree	9	
CSIR—Research Fellow	Non-Graduates	3	
	Post Graduate	5	

Library facilities: Library with over 400 books and subscribig to 30 international journals.

Major achievements claimed

- Technologies developed and transferred for upscaling/commercialisation:

- (i) In collaboration with the Institute of Microbial Technology, Chandigarh (a CSIR Institution), a technology was developed and licenced to McDowell and Company Limited. This technology increases the yield of alcohol and reduces quantity of effluent generated and has resulted in significant energy savings.
- (ii) An exploratory project undertaken to separate a compound, Hydroxycitric acid from malbar tamarind resulted in a patentable process was licenced to Renaissance Herbs, Inc., California, USA for down-payment and running royalty. By utilizing the said process, the above Company has developed food products designed for weight reduction. This product has considerable potential in U.S.A. and Europe.

- Technologies developed and ready for upscaling:

- (i) Through a collaborative effort with the Leicester Biocentre, University of Leicester, U.K., Expression of Human Insulin in yeast has been achieved. Further process development and purification is being vigorously pursued. The resultant final technology package will be the first indigenous effort to produce and make available human insulin at an affordable prices to the common man. Many pharmaceutical companies have expressed interest in this technology.
- (ii) A simple, convenient, inexpensive and novel method of clean-cut separation of anacardic acids from solvent-extracted cashew-nut shell liuid has been developed. The method is based on flash chromatography using low silica gel-CNSL ratio and modulating the stationary phase character from basic initially (to trap anacardic acids and release other phenols) and subsequently change the stationary phase character by using a weak acid to release anacardic acids. A patent application has been filed for the process. Anacardic acids have very useful biological and industrial properties.

- Patents Filed : 10
- Patents granted : 2
- Research papers/ Reports published : 13
- Seminars/Conferences attended/organised : 9

- (i) The Training program on Technology Evaluation and Pricing by CSIR and APCIT of UN on March 17, 1994. Talk "Evaluation of Energy Efficient High Alcohol Yeast Technology" by Dr. A.K. Bhandari.
- (ii) A Workshop on High Alcohol Yeast (HAY) for indian Distillers. November 27, 1993 at IMTECH, Chandigarh, Lead speakers - "History of the development of High Alcohol Yeast and its Techno Commercial Evaluation" - Dr. A.K. Bhandari.
- (i) British Yeast Group Meeting, Cardiff, Wales, V.K. March 30—April 1, 1992, attended by Dr. K.K. Raina and K. Shashi.
- (ii) Newer approaches to separation systems in biology and chemistry, attended by Dr. B. Ravin - dranath on invitation by Indian Society for Bio-Organic Chemistry, Bhabha Atomic Research Centre, Bombay 1992.

- (iii) Utilization of abundant natural products as renewable raw materials for chemical technology, attended by Dr. B. Ravindranath on invitation by the University of Manipur, 1992.
- (iv) Organic Chemistry—Future Directions, a meeti under the auspices of the "Jawaharlal Nehru Centre for Advanced Scientific Research" at Bangalore from February 20—22, 1992, attended by Dr. B. Ravindranath.
- Awards won : In the month of February'95, the highly coveted CSIR, Shanti Swarup Bhatnagar award for the Biological Sciences and Technology has been given to our Foundation by Ministry of State for Science and Technology, Mr. Bhuvnesh Chaturvedi, on February 11th, 1995 at National Physical Laboratory (NPL), New Delhi.

Name and Designation of five Senior Researchers

- Dr. P. R. Krishnaswamy: Scientific Director & CED
- Dr. B. Ravindranth : Head, Chemical Sciences
- Dr. C.S. Ramadoss : Head, Biological sciences
- Dr. A.K. Bhandari : Head, Engg. & Computer Sciences
- Dr. K. Shashi Menon : Scientist

WADIA INSTITUTE OF HIMALAYAN GEOLOGY

Address

33, Gen. Mahadeo Singh Road,
Wadia Institute of Himalayan
Geology,
Dehra Dun.

Background

Year of establishment : 1968

Major objectives

- i) To undertake, promote guide and coordinate research in the geology of Himalaya towards development of new concepts and models concerning earth structure and dynamic processes operating in Himalaya through an integrated inter-disciplinary approach.
- ii) To provide and promote effective linkages on a continuous basis between various scientific and research agencies/laboratories and other organisations working in the country and abroad in the field of Himalayan Geology and to organise seminars, symposia and training programme of specialised nature in geology of the Himalaya and other orogenic belts.
- iii) To serve as one of the National Reference Centre for the Geology of Himalaya and to provide high level consultancy services to institutions, public agencies and industries in the country.
- iv) Quick transfer and dissemination of new knowledge and all information relating to geology and allied researchers in Himalaya through publications of research papers, monographs and maps etc.

Major research areas:

The Institute specialises in many aspects of geoscience as applied to mountain building processes, mineral resource and environment. The Institute is carrying out geological research in Himalaya in the field of structural geology, tectonics, metamorphic petrology, igneous petrology, geochemistry, sedimentology, palaeontology, remote sensing, geomorphology and geophysics.

Income and R & D expenditure

	(Rs. in Lakhs)		
	1992-93	1993-94	1994-95
<i>Income</i>			
Donations received	Nil	Nil	Nil
Grants Received	194.00	243.00	278.00
<i>Expenditure on R&D</i>			
● Capital	186.38	240.39	290.84
● Recurring			

Infrastructural facilities

Land and Building : Area: 16.5 acre of land and building
Value: Rs. 1,18,38850.00 (approx.)

Equipment facilities : Gross Value: Rs. 250.00 lakhs

List of sophisticated equipments

Inductively Coupled Plasma AES, X-ray Diffraction unit, Energy Dispersive X-ray Fluorescence Unit, Atomic Absorption Spectrophotometer, Scanning Electron Microscope, Digital Spinner Magnetometer, Microgravimeters, Proton Magnetometers, Particle size Analyser, Global Positioning System and advanced research microscopes.

R & D Manpower	Qualification	Full time
Scientific & Technical	Doctorates	53
Social Sciences and Others	Post Graduates	2

Library facilities:

The Institute in its collection has 21430 books on all aspects of geosciences and specially related to mountain building processes. The library subscribes to 98 foreign and 40 Indian Journals.

Major achievements claimed

- Technologies developed and transferred for upscaling commercialisation : Internationally accepted Metabasic standard developed and communicated.
- New Techniques/methodologies developed and implemented : Various geological softwares developed for geothermometry and geobraometry.
- Research Papers/Reports Published : 159 research papers published in national and international journals, 38 technical reports prepared.
- Seminars & Conferences- Attended/Organised : Organised International seminar on Himalayan Geology & Geophysics, Group Discussion on Geological Hazards in the Himalayan region and 2nd Orientation Course on Analytical Techniques and Data Interpretation in Petrology.
- Awards won : 2 scientists (Drs. M.I. Bhat and T. Ahmad) received National Mineral Award of Govt. of India for the year 1992 & 1994 respectively.

Name and Designation of five Senior Researchers

- Prof. A.K. Sinha Sci. F
- Dr. N.S. Virdi Sci. F.
- Dr. N.S. Mathur Sci. E II
- Dr. K.K. Sharma Sci. E II
- Dr. D. Pal Sci. EII

WATERFALLS INSTITUTE OF TECHNOLOGY TRANSFER

Address
Waterfalls, J-29,
South Extension I
New Delhi-110 003.

Background

Waterfalls Institute of Technology Transfer (WITT) was founded on 2nd January 1994, with the objective to undertake Scientific Research in the area of Technology Transfer, including development, adoption, absorption and upgradation of technology and in particular Environmentally sound Technology; and thus endeavour to extend the frontiers of knowledge in the area of applied sciences. The Institute strives for excellence in engineering advances covering Environmentally Sound technologies, Energy related technologies, Water related technologies, and New and Emerging technologies; new advances in Medical applications covering hospital services, health care, drug delivery system and instrumentation; legal matters covering Intellectual property, negotiations and contracts, arbitration, dispute settlement and privatisation; information including technology sources, consultancy, institutions, collaborations and case studies.

WITT's goal is that it remains competitive on one side and on the other efficiently diffuses its findings to a large number of executive agencies and international organisations.

Initial recognised by DSIR : 1996

Income and R & D expenditure

(Rs. in lakhs)

Income

Donations Received	:	2.15
Other income including Grants Received	:	2.25

Expenditure on R & D

● Capital	:	1.12
● Recurring	:	1.54

Infrastructural facilities

Land & Building	:	Area- 2300 sq. ft
Equipment facilities	:	Gross Value- 1.1 lakhs.
List of equipment	:	

386 system PC with printer
Fax- Muratec

R & D Manpower

	Qualification	Full time	Part time
Scientific & Technical	Doctorate & Post Graduate	3	6
Social Sciences & Others	—	3	1

Major achievements claimed

● Research paper/reports published	:	4
● Books under print	:	2
● Seminars/Conference attended/Organised	:	14
● Awards given	:	2 Studentships

Name and Designation of five Senior Researchers

- | | |
|------------------------|-------------------|
| ● Dr. K.V. Swaminathan | Chairman |
| ● Dr. D.H. Shete | Vice Chairman |
| ● Mr. S Ghosh | Sr. Adviser |
| ● Dr. K. Dhingra | Jt. Director |
| ● Ms. S. Kalra | Research Scholar. |

WORLD WIDE FUND FOR NATURE—INDIA (WWF-INDIA)

Address

72-B, Lodi Estate,
New Delhi-110003.

Background

Status of the SIRO

: The World Wide Fund for Nature—India (WWF-INDIA), formerly known as the World Wildlife Fund—India, was established in 1969 as a Charitable Trust under the Bombay Public Trusts Act, 1950. Today, WWF-INDIA is the country's premier conservation NGO with a network of State and Divisional offices spread across the country.

Major objectives

: To promote nature conservation and environmental protection as the foundation for sustainable and equitable development.

Initial recognition by DSIR

: 1988

Income and R & D expenditure

			(Rs. in lakhs)
<i>Income</i>	1992-93	1993-94	1994-95
Donations Received	26.82	14.38	7.99
Grants received	85.22	132.34	121.91
Other income	283.33	311.98	372.55
<i>Expenditure on R & D</i>			
• Capital	198.05	250.96	380.57

Infrastructural facilities

Land & Building

: Area: 4004 sq. mts.

Value : Rs. 204.30 lakhs approximately

Equipment facilities

: Gross Value : Rs. 30.00 lakhs.

List of sophisticated equipment :

(a) Audio Visual & Camp equipment:

- (i) Overhead & Slide Projectors
- (ii) Television & VCR
- (iii) Cameras & Binoculars.

(b) Office Equipment:

- (i) Computers & printers.
- (ii) Electronic Typewriters.
- (iii) Photocopiers.

R & D Manpower

	Qualification	Full time
Scientific & Technical	Doctorate/ Post Graduate	6 17
Social Sciences & Others	Graduate/	13

Library facilities

- (i) The Reference Library of the WWF-INDIA has at present a collection of books representing Ecology, Environment,

Conservation and General Natural History. It subscribes for periodicals in the above fields.

- (ii) The facility is extensively used by the staff, school and college students, scientists and researchers as well as interested general public.
- (iii) As an adjunct to education and research there is also a photolibrary with a collection of slides on the flora, fauna, and ecosystems of India and themes relating to protection of wildlife and conservation of nature in general. This section also has Audio-visuals programmes on conservation related subjects including 8 & 16 m.m. films on various aspects of nature conservation.

Major achievements claimed

(i) Environment Education and Awareness

From the very beginning, promotion of environment awareness has been high on WWF-INDIA's work agenda. On 1.7.76, WWF-INDIA formally launched a Conservation Education Programme, primarily targetted at children of school-going age. Another objective was the development of a corps of interested adult volunteers consisting of teachers, college youth and others prepared to work for the spread of conservation awareness.

As part of the programme, the Nature Clubs of India (NCI) Movement was launched in 1976, which, over the years, has come to be identified as India's most popular and oldest environmental educational programme. Aimed primarily at the country's youth, the programme operates through a network of organised Nature Clubs in schools, colleges, other educational institutions and neighbourhoods. Presently there are over 700 Nature Clubs operating in the country, with a membership of about 22,000. It is significant that many of India's leading conservationists and environmentalists found their feet in the first place through WWF-INDIA's Clubs. The success of the programme thus lies in the creation of a whole new generation of conservationists in the country besides spawning scores of new NGOs and voluntary groups, which once started life as Nature Clubs.

Another significant initiative was a national programme of Teachers' Training Workshops which was started in 1992. So far, over the last 18 months, 24 Workshops have been conducted in different parts of the country in which over 1000 teachers have received training in education methodologies for the environment.

As a part of the environmental awareness programme, WWF-INDIA has also embarked upon a project for production and dissemination of elementary reading material in Hindi for the neo-literates and semi-literates.

WWF-INDIA provides regular support, by way of resource material, personnel time, guidance and advice to several institutions including the National Museum of Natural History, the National Zoo, the Centre for Cultural Resources and Training, and a number of other institutions of management and training.

WWF-INDIA also supports small education and 'awareness through action' activities of the Indian Conservation NGO network through its Conservation Action Support Programme (CASP). Until July 1994 CASP had supported 67 such small-grants projects.

WWF-INDIA's Vrindavan Forest Revival Project (VFRP) deserves special mention. Despite its association with nature, Vrindavan has been in an advanced state of environmental decay. VFRP was initiated as part of WWF-INDIA's commitment to bring about eco-restoration through the

spread of conservation education and also as follow up to WWF-International's Religion and Environment Programme.

In 1984, WWF-INDIA started functioning as an ENVIS Centre under the Ministry of Environment & Forests, responsible for looking after the information needs of legislators, journalists, researchers and NGOs. WWF-INDIA currently provides guidance, information servicing and support to over 1000 NGOs through publication of Directories of NGOs, Expertise Rosters and Query Servicing etc.

ii) *National Environmental Awareness Campaign*

In 1986, WWF-INDIA assisted the Ministry in planning and coordinating the implementation of a National Environmental Awareness Campaign (NEAC), the largest programme for creating environmental awareness in the country. Under this programme, a whole range of official and non-official agencies around the country carried out activities aimed at stimulating environmental awareness at the local level. The target groups included administratres, elected representatives, teachers, journalists and other professionals including members of the Armed Forces.

In 1986, 75 NGOs participated in the programme, 360 in 1987 and 750 in 1988. After 1988, the programme was handed over to the Ministry of Environment & Forests and is still continuing.

iii) *Wildlife Conservation*

As mentioned earlier, in the beginning, the focus of WWF-INDIA, then known as the World Wildlife Fund—India, was on protecting particular species of wildlife. The most important species and habitat-related project launched during the seventies was the Project Tiger, which was inaugurated in the Corbett National Park on 1.4.73 and involved the WWF-International and Govt. of India. The Steering Committee set up by the Government of India to draw up the project plans included three Founder Trustees of WWF-INDIA.

There were several other species-related projects in which WWF-INDIA participated in the seventies. Prominent among these was the expedition led by the late Dr. Salim Ali in 1976, to establish the status of the rare blacknecked or Tibetan crane in Ladakh. It was the first scientific ornithological expedition to Ladakh in 50 years, jointly undertaken by the Bombay Natural History Society and WWF-INDIA which financed the project. Other endangered species that were studied and whose habitats were surveyed included the Asiatic wuld dog, the rhino, the white-winged wood duck, the swamp deer, the great Indian bustard, the musk deer and the elephant.

In 1971, grants from WWF-INDIA provided for the establishment of Romulus Whitaker's Madras Snake Park. In 1975, the country's first crocodile breeding bank was inaugurated near Madras as a joint project of WWF-INDIA and the Madras Snake Park Trust.

In December 1980, WWF-INDIA initiated its first marine programme in the form of its Sea Turtle Conservation Project. Some other species which received attention included the rare Indian wolf, the flamingoes of Kutch, the Andaman teal, the pygmy hog and the hispid hare, the pangolin, the lesser cats and the lion-tailed macaque. A survey has also been under way of the nesting sites of the Great Adjutant Stork in Assam.

Safeguarding habitats by highlighting their conservation status of Government, for declaring them as sanctuaries or national parks was another of WWF-INDIA's priorities in the seventies. Among WWF-INDIA's significant achievements in this sphere were its role in the establishment of the Dalma Hill & Gautama Buddha Sanctuaries in Bihar in 1976 and

1978 respectively, and the development of the area around Mahim creek in Bombay as a bird sanctuary (the Mahim Nature Park was inaugurated in 1994). In Kerala, the Eravikulam—Rajamalai Sanctuary was established to protect the Nilgiri Tahr after persistent efforts by various NGOs including WWF-INDIA. The disastrous impact of coral mining and the destruction of mangroves in Pirotan and Doda Islands in the Gulf of Kutch was also highlighted by WWF-INDIA.

WWF-INDIA also funded surveys for the study of the Eastern Ghats and for the identification and protection of biologically rich areas in the Western Ghats. WWF-INDIA was also in the forefront of protests against the proposed Silent Valley Hydroelectric Project in Kerala which was abandoned and the area notified as the Silent Valley National Park in 1981.

In 1984, the government accepted WWF-INDIA's recommendation to notify the Buxa forest in West Bengal as a Tiger Reserve. In 1986, the Govt. of Assam, accepting the WWF-INDIA's proposal declared Dibru Saikhwa reserve forest as a sanctuary. The other campaigns by WWF-INDIA included a successful court battle to save 2000 acres of prime teak forest in Andhra Pradesh, efforts to create the country's second marine national park in Tamil Nadu, efforts for the restoration of grasslands in the Hastinapur sanctuary and the notification of the Mansarovar lake and dodai Tal lake as Sanctuaries, establishment of the Delhi Wildlife sanctuary and a ten year campaign that resulted in the creation of the Balphakram sanctuary in Meghalaya.

Currently, WWF-INDIA is engaged in court battles for the protection of the Delhi Ridge, the Narayan Sarovar Sanctuary in Gujarat and the Biharkanika Sanctuary in Orissa.

(iv) *Biodiversity Conservation*

In 1989 WWF-INDIA launched the Community Biodiversity Conservation Movement aimed at mobilising community action at the grassroots level of conserving biological diversity at the grassroots level, mainly through small demonstration projects implemented by the grassroots NGOs, community groups, and individual farmers, with technical and financial support provided by WWF-INDIA. During 1993, twelve such projects were under implementation in various parts of the country.

(v) *A Biodiversity Hotspots Conservation Programme*

Focussing attention on the two biodiversity world hotspots in India—the Eastern Himalaya and the Western Ghats—was initiated in 1992-93. With the help of WWF-INDIA's network in the concerned States, surveys have been carried out in both the biogeographic zones to identify areas of special focus and the nature of constraints and opportunities in each case. More recently a field project office has been set up at Itanagar, Arunachal Pradesh.

Another important initiative taken recently is the launching of the *Conservation Corps Volunteers (CCV) Programme* in 1991-92, to develop a cadre of young conservation professionals. Young and motivated volunteers are selected for a two-year structured training programme with a field-based NGO acting as the 'host agency'. During 1993, the programme was managing 21 CCVs around the country.

An *Ecodevelopment* project has been launched in Ranthambhore, focussing on biodiversity conservation and eco-regeneration. The ultimate aim is to make the communities living on the periphery of the national park less directly dependent on the natural resources of the park and to help them develop a stake in protecting it. WWF-INDIA has also completed a socio-economic survey of the southern periphery of the Manas tiger reserve in Assam aimed at the formulation of an eco-development plan for the fringe villages.

Since 1990, WWF-INDIA has also focussed attention on the conservation of wetlands in the country. The programme attempts to build awareness,

especially among the decision makers, about wetlands values and improve the information base as well as on them to undertake field projects, inventories, case studies, publications and policy papers. A key project within the wetlands programme was the development of scientific and management case material on six major wetlands of international importance. (Ramsar sites).

vi) *Traffic India*

One of WWF-INDIA's chief concerns right from its inception has been the prevention and control of illegal trade in wildlife and its derivatives. On numerous occasions, the Wildlife Trade Monitoring Unit of WWF-INDIA has assisted the authorities in the seizure of illegal consignments of wildlife and its products. In December, 1991, this unit was formally converted to TRAFFIC-INDIA—the Trade Record Analysis of Flora and Fauna in Commerce—a part of the world's largest wildlife trade monitoring programme which was instituted in 1976 as a joint WWF—IUCN venture. The activities of TRAFFIC-INDIA includes data collection and analysis, field surveys, investigations and training programmes for the personnel in various enforcement agencies.

vii) *Indira Gandhi Conservation Monitoring Centre (IGCMC)*

It has been set up, with assistance from the Ministry of Environment & Forests and the ODA (UK), to build upon WWF-INDIA's existing conservation database and to develop and maintain a central repository of information to support the conservation and sustainable use of the biological diversity in India. It will provide technical support to the conservation programme of the Government of India, both at the policy and programme levels. The IGCMC, which has started functioning from 1.5.94.

viii) *Pollution Monitoring and Control*

In 1991-92, WWF-INDIA initiated a pollution monitoring and control programme. The main activity in the initial phase was a project to enhance Indian NGO capacity for low cost pollution monitoring and to develop plans for monitoring-based campaigns against environmental pollution. The main thrust in 1992-93 was the development of low-cost air and water pollution monitoring kits, prototypes of which are currently being field-tested for large-scale fabrication and distribution.

The Pollution Monitoring and Control Division is also conducting feasibility studies for examining the legal, political and financial issues in establishing a Toxic Releases Inventory (TRI) for India. This project will assist the Government of India's work to enforce the requirement for environmental audits by the Indian industry.

In support of India's participation in the Climate Change Convention and the Montreal Protocol, WWF-INDIA initiated a Pilot Programme on Technology Transfer. In partnership with the WWF-US, two major Indian NGOs and an Industry Association, WWF-INDIA has taken this initiative to examine the practical implications of technology transfer and dissemination.

ix) *Centre for Environmental Law (CEL)*

The Centre for Environmental Law (CEL) was set up as an integral part of WWF-INDIA on 15 July 1993. Its main objectives are:—

- (a) support in a WWF-INDIA's initiatives for legal interventions on matters concerning nature conservation and environment protection;
- (b) capacity building and human resource development in the discipline of environmental law, through educational programmes, including curriculum development;

- (c) developing a central repository of legal information; and
- (d) organising policy analysis and research for formulation or amendment of environmental laws at national, regional and international levels.

The CEL offers a six months' Diploma in Environmental Law specially for law students. The first batch was awarded diplomas in March 1994. The second batch is currently undergoing training.

x) Communication

For more than 22 years, WWF-INDIA has been reaching out to its subscribers through a newsletter aimed at increasing their environmental awareness. The Communications Programme was revamped in 1992-93 with a quarterly magazine, a features service and publications and media servicing. The WWF-INDIA Quarterly magazine has been upgraded in terms of both content and presentation. WWF-INDIA's Features have found wide acceptance among the most significant segments of the Indian print media. It now proposes to set up a television unit to exploit the massive potential of the audiovisual media.

xi) *International Conservation Policy*

As a part of the WWF-International network, WWF-INDIA has been contributing to the policy work on global environmental issues. It has helped to define and formulate WWF-International's position on various subject areas and the international conventions finalised at the Rio Conference in June 1992. The President, WWF-INDIA, was a senior Adviser to the prime Minister of India in the official delegation to the Rio Conference.

WWF-INDIA prepared a report entitled 'From the GEF to a Southern Green Fund', as part of WWF-International's policy studies targetted at reforming the World Bank's Global Environmental Facility to make it more sensitive to the concerns of the South.

Name and Designation of five Senior Researchers

- Mr. Avenash Datta, Director Planning & Programme Corrdination
- Dr. Chhatrapati Singh, Director Centre for Environmental Law
- Mr. Arvidn Khare, Director Conservation
- Dr. N. G. Nair, Director, Biodiversity Hotspob Conservation Programmes Community Biodiversity Conservation Movement
- Mr. A.R.K. Shastry, Programme Coordinator, India Gadhi Conservation Monitoring Centre:

List of Scientific and Industrial Research Organisations in the Volume on Medical Science and Social Science

MEDICAL SCIENCES

1. Addiction Research Centre, Madras.
2. All India Heart Foundation, New Delhi.
3. All India Institute of Physical Medicine & Rehabilitation Society for promotion of Medical Research, Mumbai.
4. Amala Cancer Research Centre, Trichur.
5. Aravind Medical Research Foundation, Madurai.
6. Bai Jerbai Wadia Hospital for Children and Institute of Child Health Research Society, Mumbai.
7. Bala Mandir Medical Research Foundation, Madras.
8. Bangalore Kidney Foundation, Bangalore.
9. Batra Medical Research Centre, New Delhi.
10. Bhartiya Vaidyak Samanvaya Samiti's All India Ayurveda Research Institute, Nagpur.
11. Blind Men's Association, Ahmedabad.
12. Breach Candy Medical Research Centre, Mumbai.
13. Cancer Care Trust & Research Foundation, Indore.
14. Cancer Hospital and Research Institute, Gwalior.
15. Cancer Institute (WIA), Madras.
16. Central India Institute of Medical Sciences, Nagpur.
17. Centre for Research in Mental Retardation of V.D. Indian Society for Mentally Retarded, Mumbai.
18. Christian Medical College and Hospital, Vellore.
20. Deendayal Cancer Research Centre, Pune.
21. Dharamashila Cancer Foundation and Research Centre, Delhi.
22. Diabetes Foundation (India), New Delhi.
23. Diabetes Research Centre Foundation, Madras.
24. Divyajot Ayurvedic Research Foundation, Ahmedabad.
25. Dr. Baba Saheb Ambedkar Medical Research Society, Aurangabad.
26. Dr. Jivraj Mehta Smarak Health Foundation, Ahmedabad.
27. Escorts Heart Institute and Research Centre, New Delhi.
28. F.I.A.M.C. Bio-Medical Ethics Centre, Mumbai.
29. Free Polio Surgical and Research Foundation, Vishakhapatnam.
30. Gandhi Memorial Leprosy Foundation, Wardha.
31. Goa Cancer Society, Goa.
32. Harilal Jechand Doshi Medical Research Foundation, Rajkot.
33. Hastimal Sancheti Research Foundation, Pune.
34. Heart Foundation and Research Institute, Ahmedabad.
35. Himalayan Institute Hospital Trust, Kanpur.
36. Hormone Research Foundation, New Delhi.
37. Hyderabad Eye Research Foundation, Hyderabad.

38. Indian Academy of Paediatrics, Mumbai.
39. Indian Cancer Society, Mumbai.
40. Indian Cancer Society, Solapur.
41. Indian Council of Medical Research, New Delhi.
42. Indian Health Organisation, Mumbai.
43. Indian Medical Scientific Research Foundation, Rajkot.
44. Indore Cancer Foundation Charitable Trust, Indore.
45. Institute of Cardiology & Research Centre, Ahmedabad.
46. Institute of Child Health and Hospital for Children, Madras.
47. INYS Medical Research Society, Bangalore.
48. Jaslok Hospital & Research Centre, Mumbai.
49. Kaivalyadhama Shriram Madhava Yoga Mandir Samiti (SMYM), Lonavala.
50. Kamala Nehru Memorial Hospital, Allahabad.
51. Kamayani Prashikshan & Sanshodhan Society, Pune.
52. Karnataka Cancer Therapy and Research Institute, Hubli.
53. KCP Nephro-Urological Centre and Research Foundation, Vijayawada.
54. K.E.M. Hospital Research Centre, Pune.
55. Kidwai Memorial Institute of Oncology, Bangalore.
56. Lions Cancer Research Centre, Surat.
57. Lokmanya Medical Research Centre, Pune.
58. Lokmanya Tilak Hospital Silver Jubilee Research Foundation, Mumbai.
59. Maharashtra Medical Research Society, Pune.
60. Mahendra Eye Research Centre, Kanpur.
61. Mangalam, Lucknow.
62. Medical Research Centre of Bombay Hospital Trust, Mumbai.
63. MMM Heart Foundation & Research Centre, Madras.
64. M.P. Birla Medical Research Centre, Calcutta.
65. Muljibhai Patel Society for Research in Nephro-Urology, Nadiad.
66. Nagri Eye Research Foundation Trust, Ahmedabad
67. Nanavati Hospital and Medical Research Centre, Mumbai
68. National Academy of Medical Sciences (India), New Delhi
69. National Centre for Cell Science, (Formerly National Facility for Animal Tissue and Cell Culture -NFATCC), Pune
70. National Health and Education Society, Mumbai
71. National Society for the Prevention of Blindness - India, New Delhi
72. Nowrosjee Wadia Maternity Hospital Sir Ness Wadia Research Society, Mumbai
73. Nutrition Society of India, Hyderabad
74. Post Graduate Institute of Medical Education & Research, Chandigarh
75. Rajkot Cancer Society, Rajkot
76. Regional Cancer Centre, Trivandrum
77. Sanjay Gandhi Accident Hospital & Research Institute, Bangalore

78. Schieffelin Leprosy Research and Training Centre, Karigiri
79. Schizophrenia Research Foundation (India), Madras
80. Serum Institute of India Research Foundation (SIRRF), Pune
81. Shri Mukandi Lal Memorial Foundation for Heart and Medical Care, New Delhi
82. Sir Hurkisondas Nurrotumdas Medical Research Society, Mumbai
83. Sitaram Bhartia Institute of Science & Research, Calcutta
84. Skin Institute Research Society, New Delhi
85. Span Research Centre, Udhna (Surat)
86. Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum
87. Sri Aurobindo Ashram Trust, Pondicherry
88. Sri Jayadeva Institute of Cardiology, Bangalore
89. Thakur Hari Prasad Institute of Research and Rehabilitation for the Mentally Handicapped, Hyderabad
90. The Bandra Holy Family Medical Research Society, Mumbai
91. The Eye Research Foundation, Madras
92. The Foundation for Medical Research, Mumbai
93. The Gujarat Cancer Society, Ahmedabad
94. The Gujarat Research and Medical Institute, Ahmedabad
95. The Kasturba Health Society, Wardha
96. The Madras Institute of Magnetobiology, Madras
97. The Research Society of the Bombay College of Pharmacy, Bombay
98. The Research Society for the Care, Treatment and Training of Children in Need of Special Care, Mumbai
99. The Voluntary Health Services, Madras
100. Viklang Kendra Rural Research Society, Allahabad
101. Vivekananda Kendra Yoga Anusandhan Samsthan, Bangalore
102. Vivekananda Medical Research Society, Latur
103. Vision Research Foundation, Madras
104. Y.R. Gaitonde Medical Educational Research Foundation
(Unit: The Heart Institute), Madras
105. Zandu Foundation for Health Care, Mumbai

IV. SOCIAL SCIENCES

1. Academy of Sanskrit Research, Melkote
2. Administrative Staff College of India, Hyderabad
3. Asian Centre for Organisation Research and Development, New Delhi
4. Baroda Citizens Council, Baroda
5. Bharati Samskrita Vidya Niketanam, Mumbai
6. Birla Economic Research Foundation, Calcutta
7. Centre for Advance Strategic Studies, Pune
8. Centre for Applied Systems Analysis in Development, Pune

9. Centre for Organisation Development, Hyderabad
10. Centre for Policy Research, New Delhi
11. Centre for Research Planning and Action, New Delhi
12. Centre for Research in Rural and Industrial Development, Chandigarh
13. Centre for Social Studies, Surat
14. Centre for the Study of Developing Societies, Delhi
15. Deen Dayal Research Institute, New Delhi
16. Fiscal Research Foundation, New Delhi
17. Foundation for Organisational Research and Education, New Delhi.
18. Gandhi Labour Institute, Ahmedabad
19. Gandhian Institute of Studies, Varanasi
20. India Heritage Research Foundation, New Delhi
21. Indian Council for Research on International Economic Relations, New Delhi
22. Indian Institute of Education, Pune
23. Indian Institute of Management, Ahmedabad
24. Indian Institute of Psychometry, Calcutta
25. Indira Gandhi Institute of Development Research, Mumbai
26. Institute for Financial Management and Research, Madras
27. Institute for Studies in Industrial Development, New Delhi
28. Institute for Techno-Economics Studies, Madras
29. Institute of Banking Personnel Selections, Mumbai
30. Institute of Marketing & Management, New Delhi
31. Jain Vishwa Bharati, Ladnun.
32. Jnana Prabodhini Samshodhana Sanstha (JPSS), Pune
33. Karve Institute of Social Service, Pune
34. Krishnamurthi Foundation India, Madras
35. Lalbhai Dalpatbhai Bharatiya Sanskriti Vidyamandir (Formerly Lalbhai Dalpatbhai Institute of Indology), Ahmedabad.
36. Madras Institute of Development Studies, Madras.
37. Madras School of Economics, Madras
38. Maharshi Sandipani Rashtriya Veda Vidya Pratishthanam, Ujjain
39. Model Institute of Education Research, Jammu
40. National Council of Applied Economic Research, New Delhi
41. National Foundation for India, India Habitat Centre, New Delhi
42. National Institute of Bank Management, Pune
43. National Institute of Public Finance and Policy, New Delhi
44. National Law school of India University, Bangalore.
45. Parshvanath Vidyashram Research Institute, Varanasi of Puja Sohanlal Smarak Parshvanath Shodh Peeth, Faridabad
46. People's Institute for Development Training, New Delhi
47. Research Foundation for Jainology, Chennai



48. Sardar Patel Institute of Economic and Social Research, Ahmedabad
49. Shri Ram Centre for Industrial Relations and Human Resources, New Delhi
50. Shri Ram Charan Prachya Vidhya Peeth and Sangrahalaya Trust, Jaipur
51. Social Policy Research Institute, Jaipur
52. Society for Social Change, Indore
53. Sri Aurobindo Society, Pondicherry
54. Sur Smarak Mandal, Agra
55. Swami Ramanand Teerth Institute of Socio-Economic Research and National Integration, Hyderabad
56. Sweekaar Rehabilitation Institute for Handicapped, Secunderabad
57. T.A. Pai Management Institute, Manipal
58. Thakur Research Foundation, New Delhi.
59. The Institute of Company Secretaries of India, New Delhi
60. The K.R.Cama Oriental Institute, Mumbai
61. The Mother's Service Society, Pondicherry
62. University of Pennsylvania Institute for the Advanced Study of India, New Delhi.
63. Vaikunthbhai Mehta Research Centre for Decentralised Industries, New Bombay.
64. Ved Vignan Mahavidya Peeth, Bangalore.
65. Vipassana Research Institute, Mumbai.
66. Vivekananda Nidhi, Calcutta.
67. Xavier Labour Relations Institute, Jamshedpur.

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